

STUDENT ID #: A42772981; GROUP #: 1

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

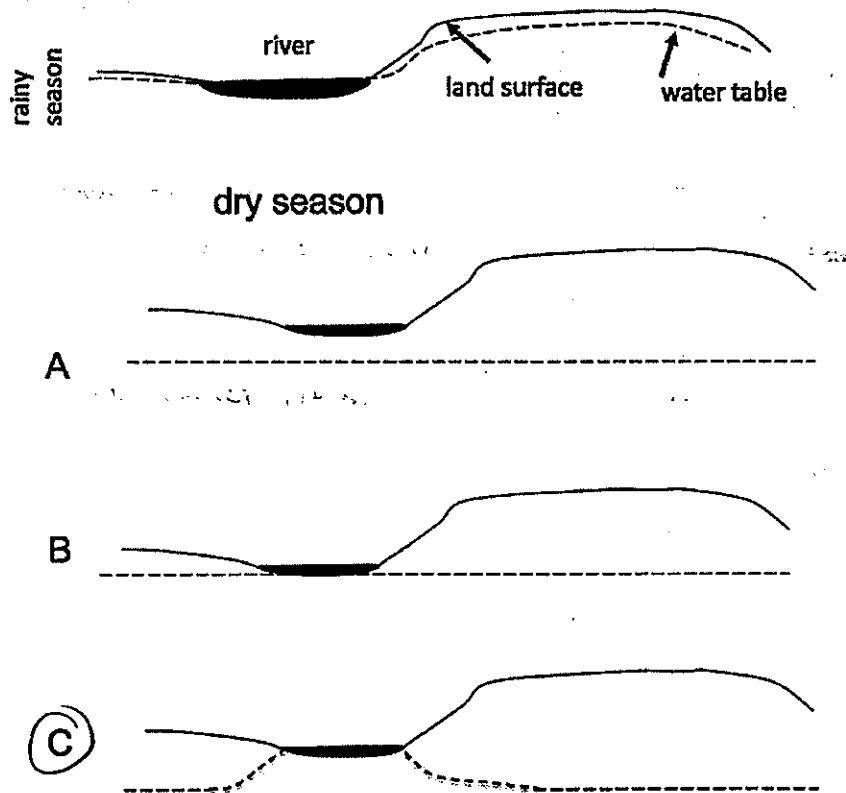
1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☒ a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____ A ____, then becomes water in a glacier through the process of ____ B ____, and then becomes water in clouds through the process of ____ C ____.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☒ a. Liquid water from the pot condenses
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c. Water vapor from the pot condenses
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

With warmer weather comes more precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

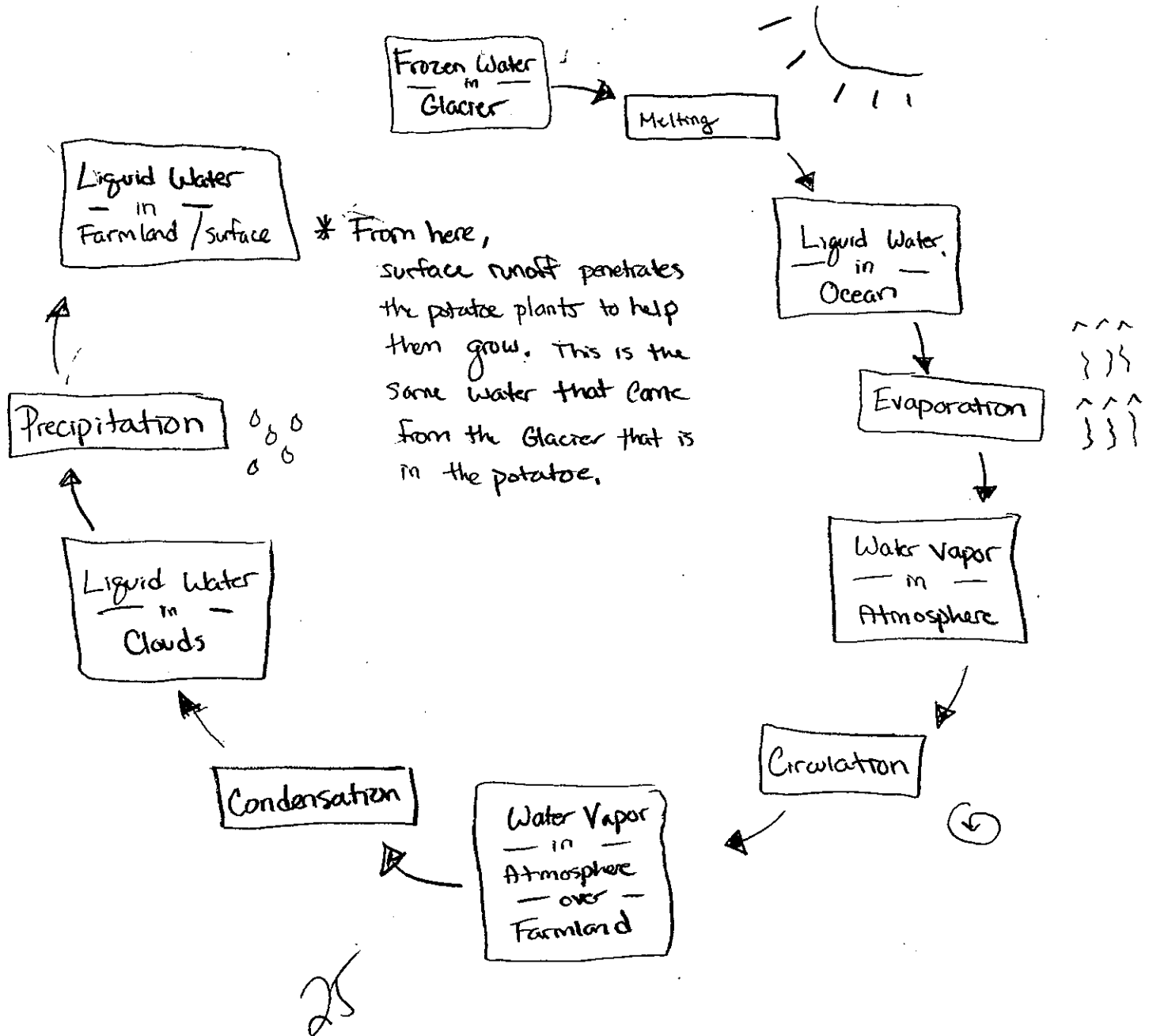
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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Thermohaline

Circulation in oceans is caused by the wind pushing the water as well as differences in density between warm water and cold water. The water on the surface is heated by the sun. Then, the warm water is less dense and sinks while being replaced by more cold water from below.

If polar ice contained more salt than the surrounding water, this would then mean that the ice is more dense than the water around it. I do not believe that this change in salinated ice would directly affect circulation in oceans because as the water from other regions made its way to the polar regions, it would bring more salt and thus, resalinating the water around the ice. Circulation is a constant process and I do not believe it would be affected if polar ice contained more salt.

10

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 37

YOUR SCORE:

67

STUDENT ID #: A40175820; GROUP #: 1A

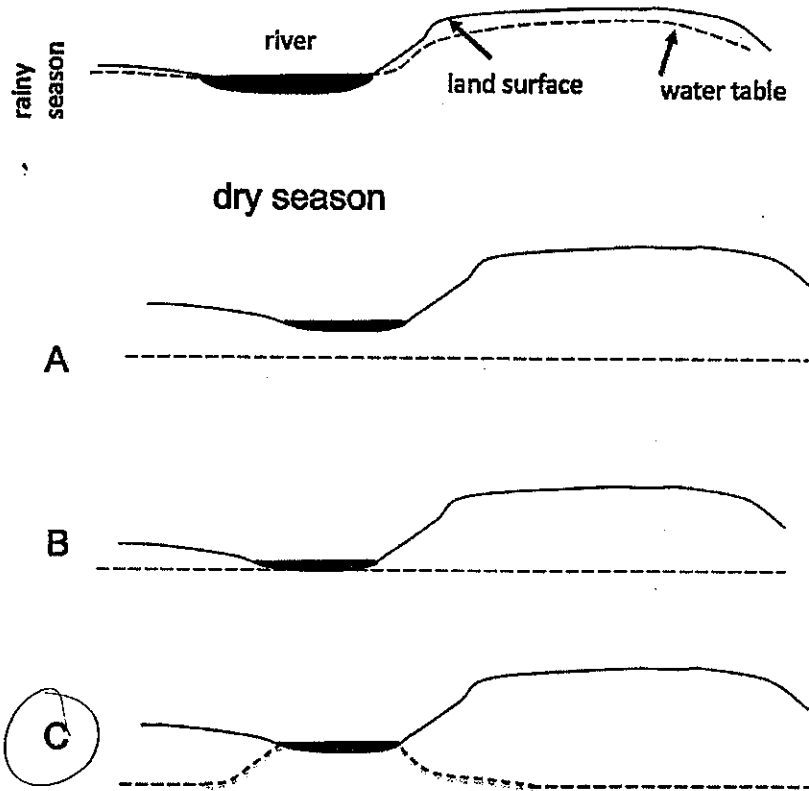
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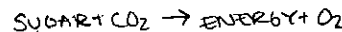
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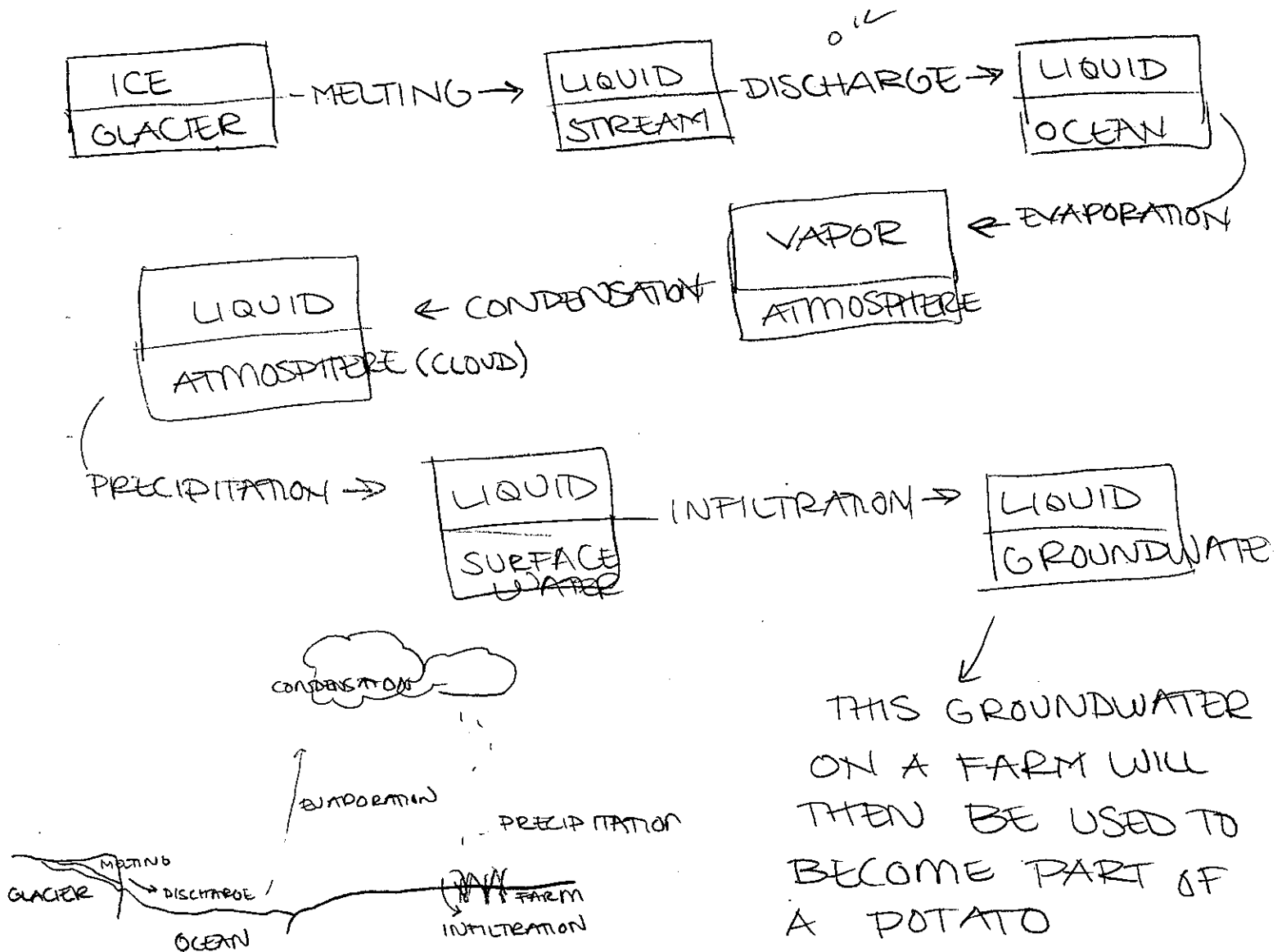
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- b. Plants convert energy into biomass
- c. Plants release energy

A40175820

SHORT ANSWER. 25 points each (50 points total)

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- Water phase at each step in the journey
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25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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IF POLAR ICE CONTAINED MORE SALT, THERMOHALINE CIRCULATION WOULD CHANGE. COMPOSITION AND BUOYANCY ARE LARGE FACTORS IN OCEAN CIRCULATION. USUALLY WARM LESS DENSE WATER RISES TO THE TOP AND ALSO SALT MAKES THINGS MORE DENSE AND THESE TWO THINGS CAUSE OCEAN CIRCULATION. THE POLAR ICE WOULD BECOME MORE DENSE WITH ALL THE SALT IT CONTAINED. WITH SO MUCH ICE + SALT, THE OVERALL TEMPERATURE OF THE OCEAN COULD DROP TOO BECAUSE OF ALL THE ICE THAT WOULD MELT. THIS OVERALL COOLING + SALT WOULD SLOW DOWN CIRCULATION.

WARM WATER
OCEAN CIRCULATION
↓ COOLING WATER

SALT WATER
MEANS NO FRESH WATER
FRESH WATER
SALT WATER

2 EXTRA CREDIT (2 points) PROCESSES.
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45 37

YOUR SCORE:

82

STUDENT ID #: A91919545; GROUP #: 1

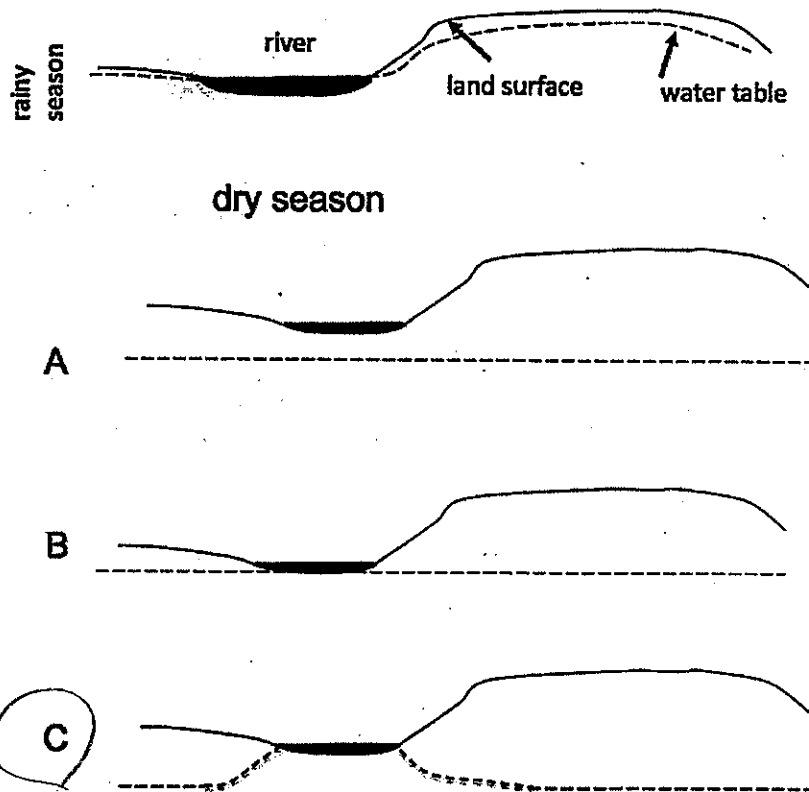
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

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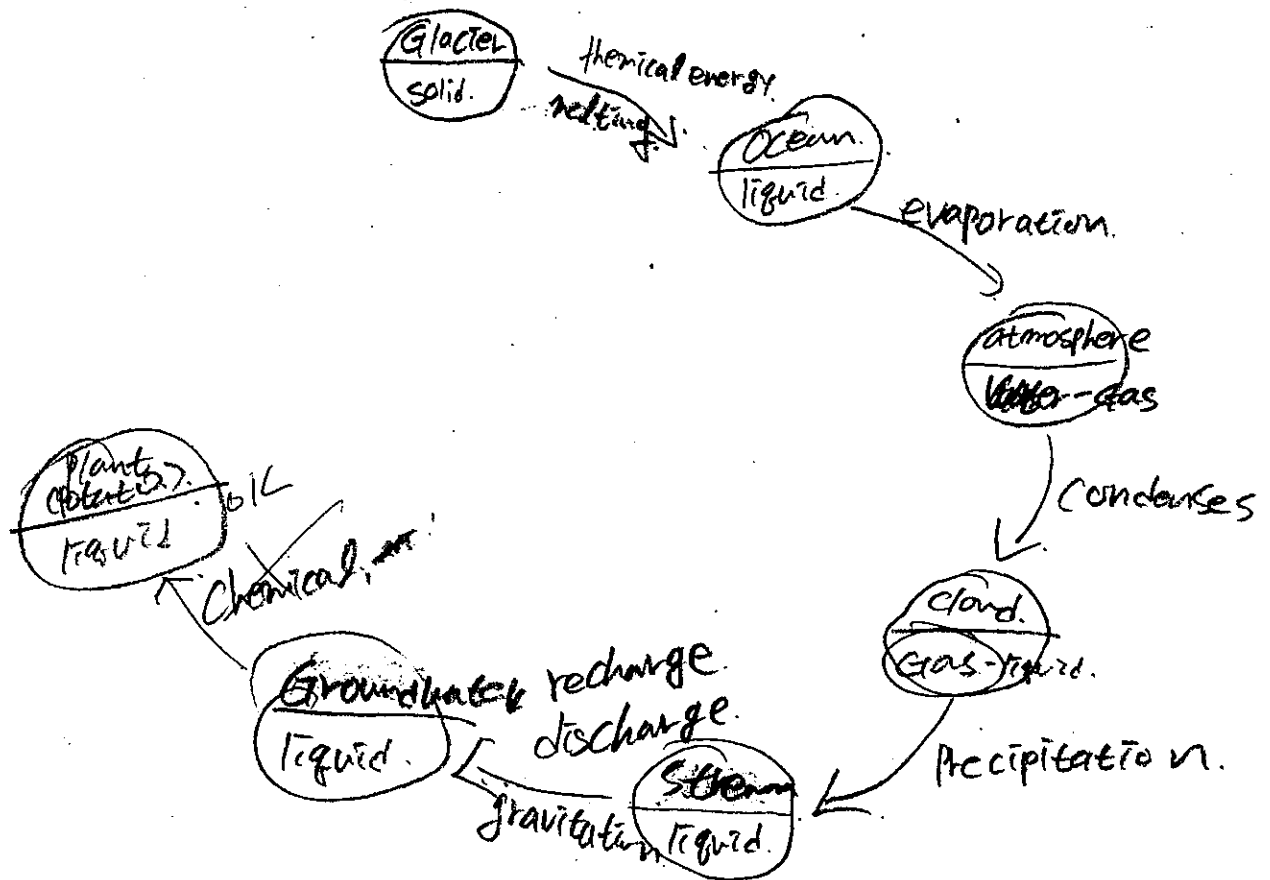
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- ☒ a. Plants convert biomass into energy
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A71919545

SHORT ANSWER. 25 points each (50 points total)

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First of all Energy needs to break something out bond something. Every materials are ~~the~~ shaking ~~that~~ for example, water molecules are also shaking but ice's molecules we cannot shake well because they are stick together. And sea water have many different factors ~~so~~ that's why sea water density is more then freshwater.

However, if polar ice contained more salt than the surrounding sea water from which it freezes. All of glacier will be sinked ~~to~~ into the seawater because ice's density is ~~getting~~ higher than sea water. Sea water level will ~~to~~ goes up.



Ice.
x → salt

5

EXTRA CREDIT (2 points)

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- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
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- They both convert kinetic energy into potential energy.

40 28

YOUR SCORE:

68

STUDENT ID #: A1986100; GROUP #: 1-A

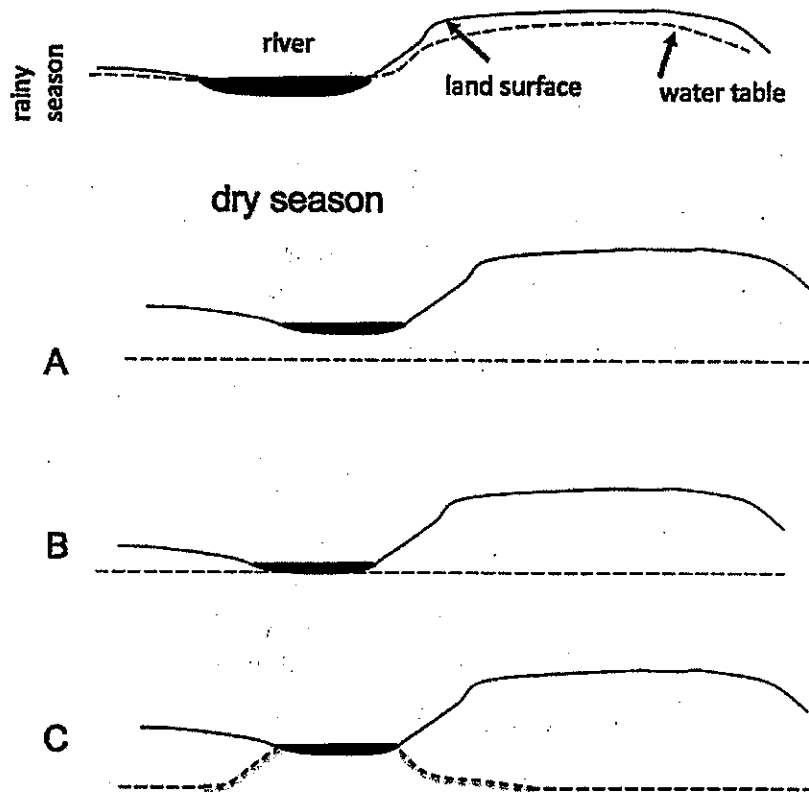
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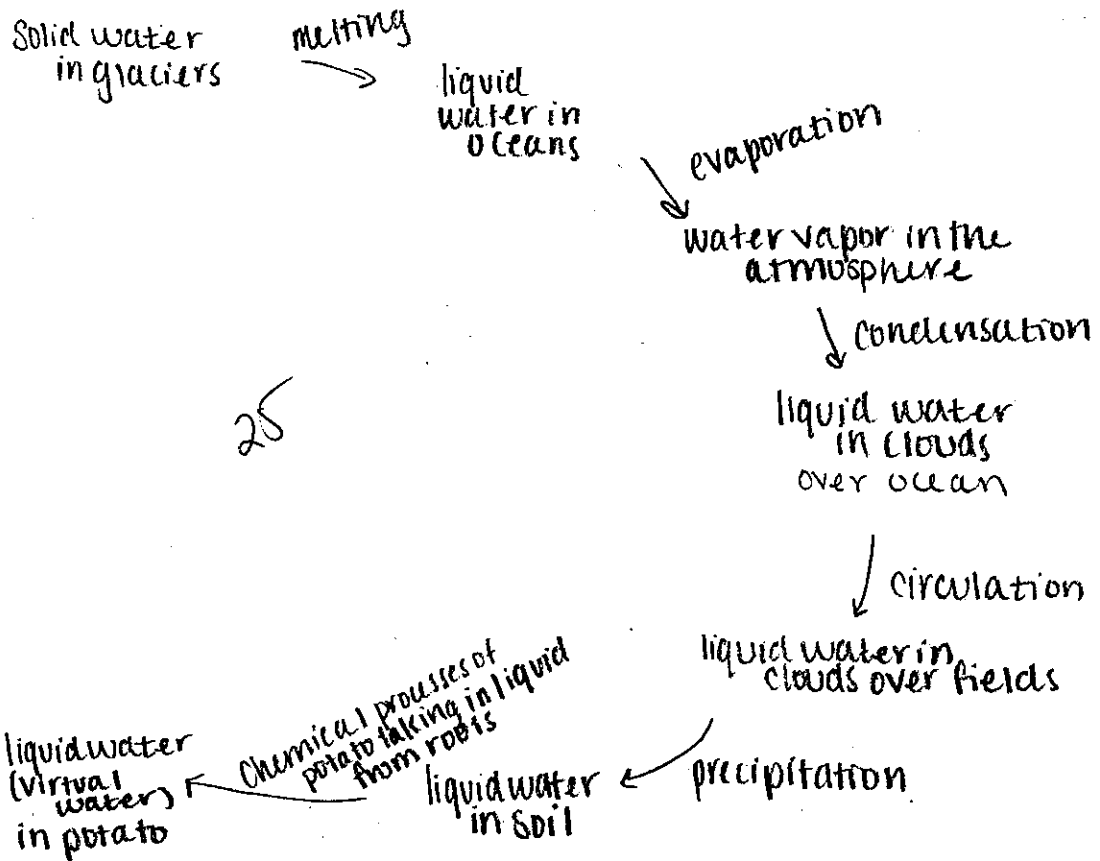
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SHORT ANSWER. 25 points each (50 points total)

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As the water begins in solid form in the glacier it then melts into liquid in the oceans, that liquid then evaporates into water vapor in the atmosphere which will then condense into liquid to form clouds. Precipitation will then occur causing the liquid water in the clouds to fall to Earth's surface and infiltrate into the soil. The water in the soil will then be absorbed by the plant and into the potato by a series of chemical processes.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
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The driving forces behind thermohaline currents are temperature and salinity. The warm water at the surface that has been heated by thermal energy from the sun is cooled by the wind that blows across it, also causing evaporation to occur at the same time which increases the salinity of the water near the surface. This cooler, denser water with a higher salinity (also causing the water to be denser) then sinks, displacing cooler waters towards the bottom of the ocean to be forced upward and heated.

15 If polar ice contained more salt than the surrounding seawater the process of thermohaline circulation would decrease. Because the salt content of the surface water that is being evaporated is decreased, this takes away a huge factor in the thermohaline circulation itself – that being salinity. Without the increased density of surface water with a higher salinity, the sinking of water masses would rely solely on the cooling of water by wind currents causing this process to slow and decrease in general.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

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- They both convert kinetic energy into potential energy.

40 42

YOUR SCORE:

82

STUDENT ID #: Michelle Hamilton; GROUP #: 2

38181168

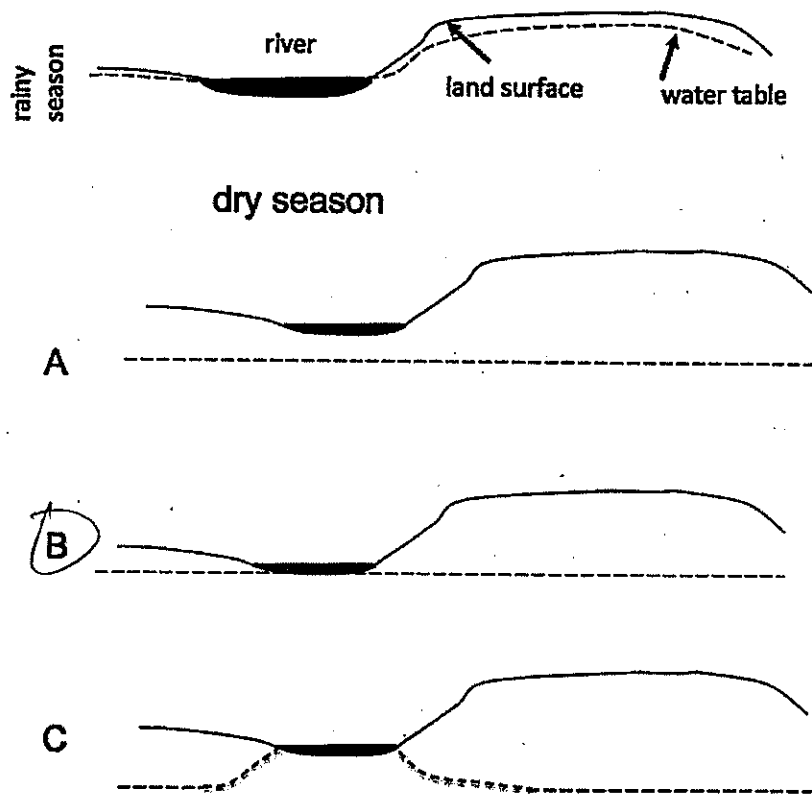
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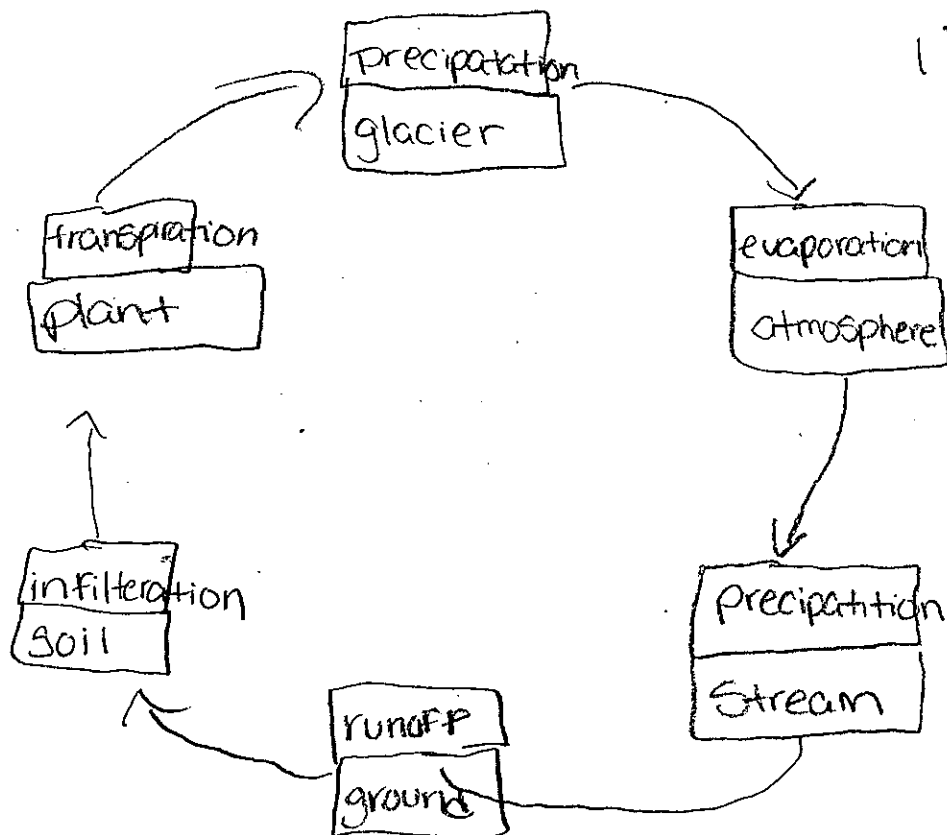
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A381168

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As a molecule falls from the sky during precipitation onto a glacier. As it starts to get a little warmer, the molecule is evaporate into the air where it becomes part of the clouds. As it precipitate down into a stream, which will runoff into a garden. During infiltration, the water is absorbed into the soil. The ground water goes to the potato through its roots through transpiration



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Thermohaline circulation is a process in which the oceans move many ^{warmer} currents to colder regions this is due to the density change between the cold and warm water. The energy that moves the water is called gravitational energy. If the water contains more salt it would force more of the colder water to the top making waters colder than normal.

15

τ?

EXTRA CREDIT (2 points)

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25 30

YOUR SCORE:

55

STUDENT ID #: A 43481863; GROUP #: 2

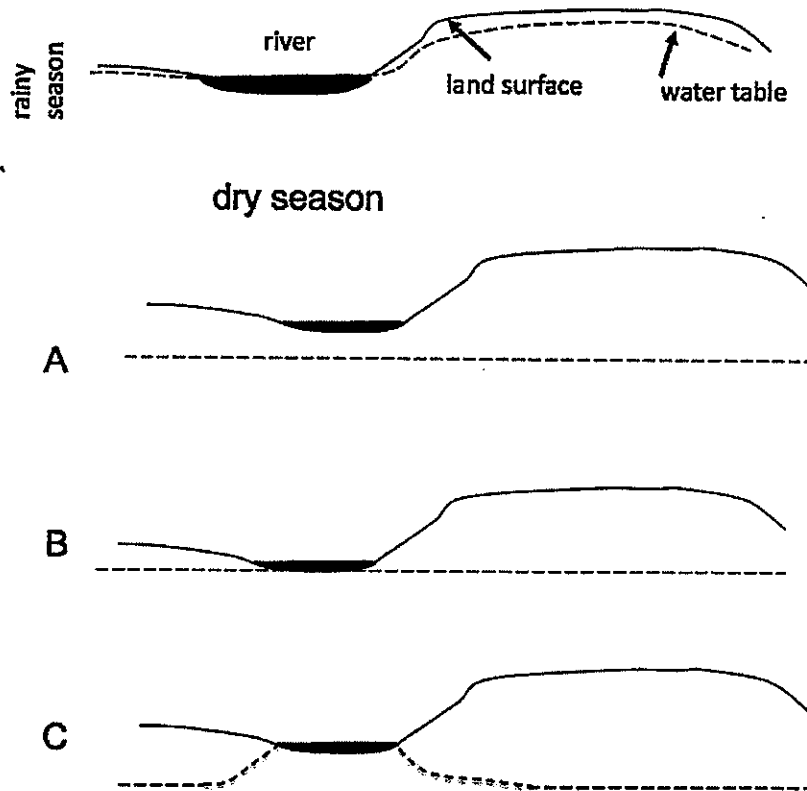
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- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



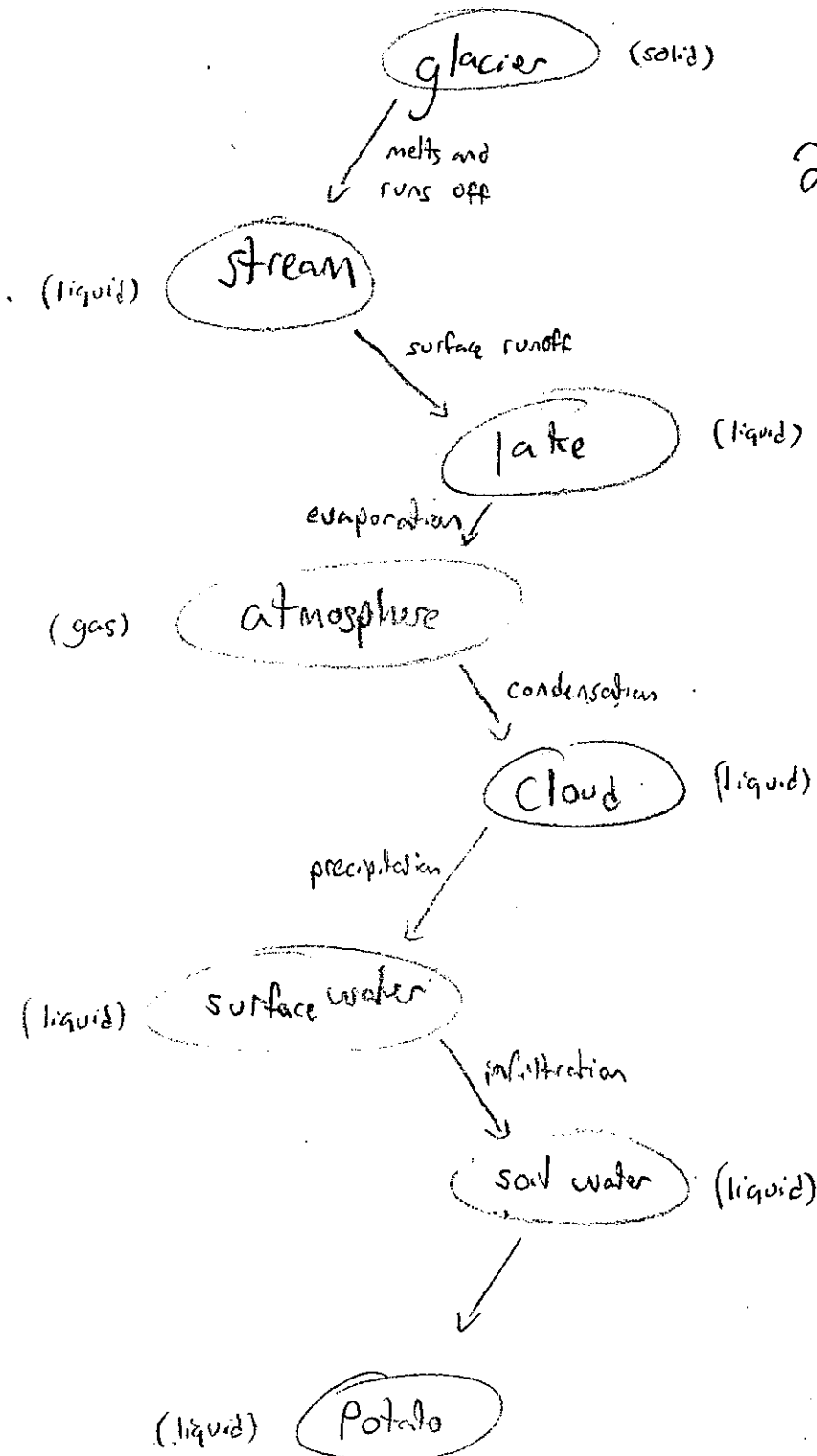
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43481863

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

In thermohaline circulation, water that is cold and/or salty sinks where water that is warm and/or less salty rises. Salt makes it more difficult for water to freeze, so the idea that polar ice would contain more salt than the surrounding sea water makes no sense. If it were the case, however, it would be much easier for the polar ice to melt.

5

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

40 30

YOUR SCORE:

70

STUDENT ID #: 092087601; GROUP #: 2

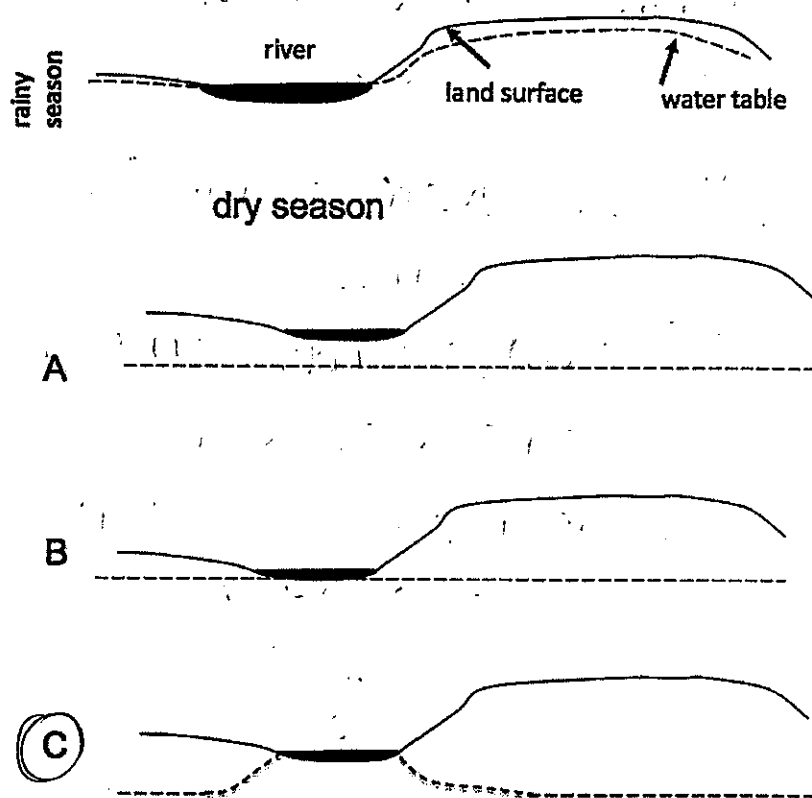
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - ☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- ☒ a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- ☒ c. Plants release energy

A42087601

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- a. Water phase at each step in the journey
- b. A name for each process that moves or transforms water

water in glacier



vapor in atmosphere

22.

(~~evaporates~~) sublimate



liquid water in clouds

(condenses)

↓ liquid water on ground

(precipitation)

↓ liquid water in potato
(recharge)

Potato soaks up rainfall in order
to help it grow.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs because the different densities, along with wind and currents. Warmer water will go to the top (less dense) while colder water wants to sink (more dense) because of the gravitational energy. The water keeps moving. Polar ice containing more salt would float because it is less dense but ice already floats because it is less dense than liquid water so there wouldn't be a change.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

50 24

YOUR SCORE:

74

STUDENT ID #: A40741960; GROUP #: 2

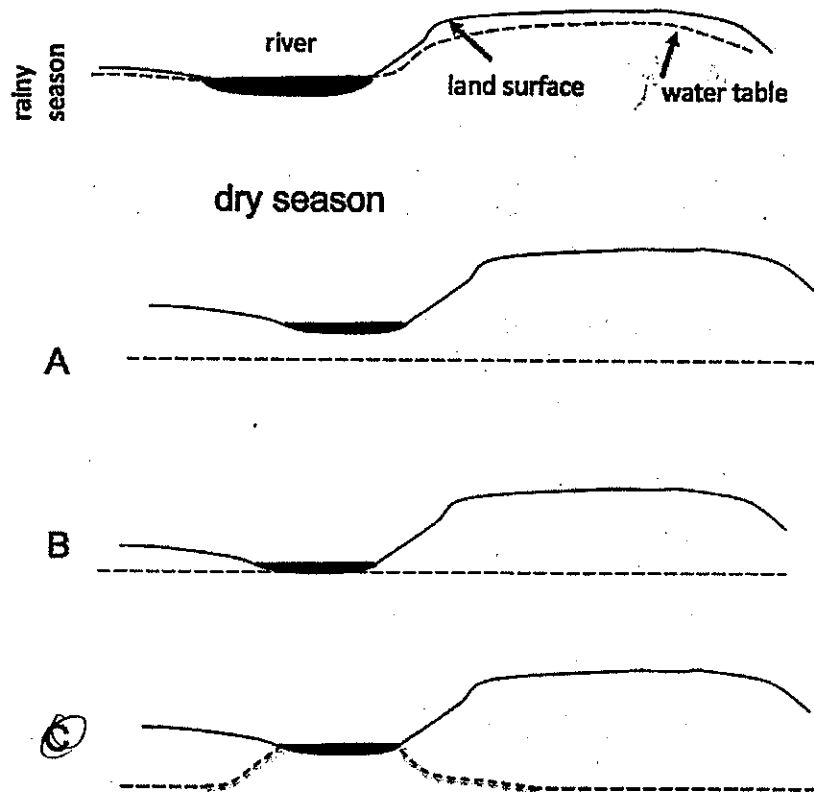
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
- * 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of GRAV A energy. Water in the atmosphere becomes water in clouds as a result of ther B energy. Water in clouds becomes water in the atmosphere as the result of ther C energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

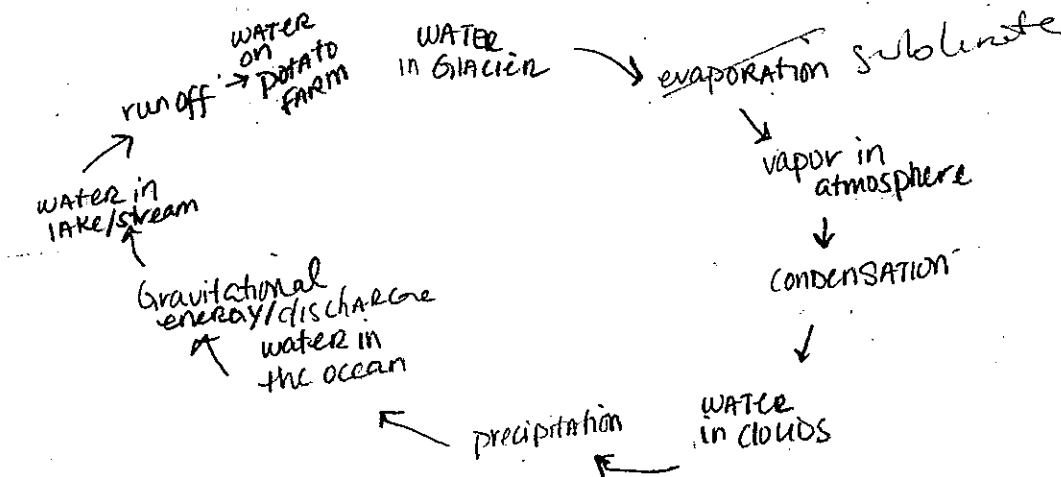


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - ☒ b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - ☒ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

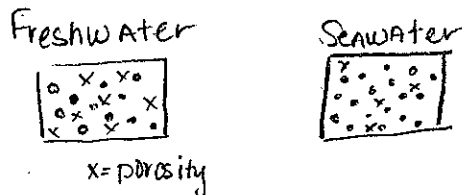
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater thermohaline circulation would be increased. Seawater naturally contains more salt than there is in freshwater reservoirs such as glaciers. Thermohaline circulation happens because the water molecules that interact with the salt does not allow as much space for the salt to linger. As the water circulates and heats up, more of the freshwater evaporates than the saltwater. If polar ice contained more salt it would be easier for the water to evaporate because of the increased temperature of the water body.

5



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 29

YOUR SCORE:

74

STUDENT ID #: 143206779; GROUP #: 3

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____ A ____, then becomes water in a glacier through the process of ____ B ____, and then becomes water in clouds through the process of ____ C ____.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

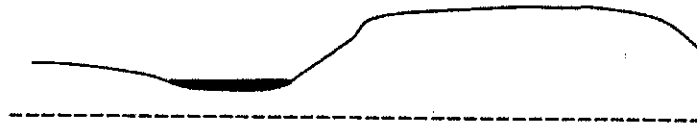
- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

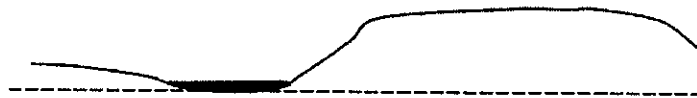


dry season

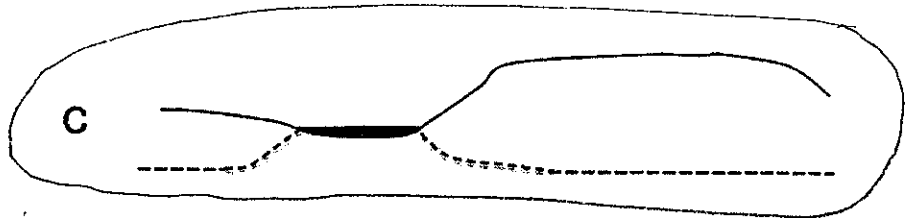
A



B



C



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

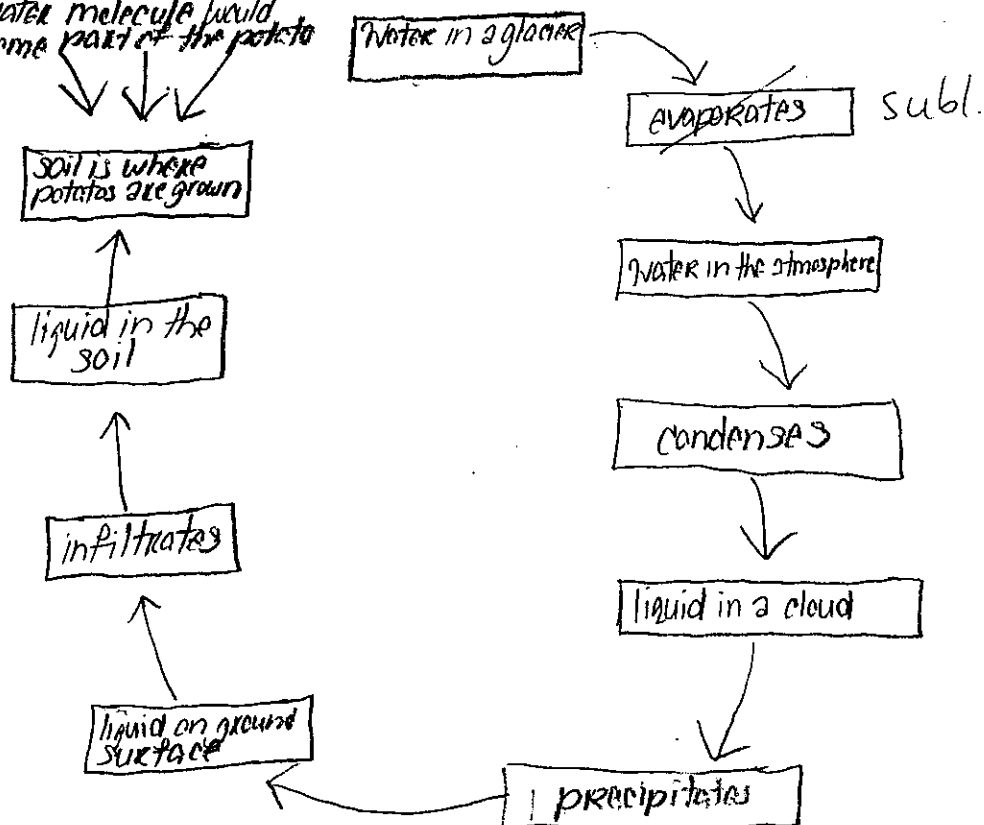
A43206773

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

The water molecule would now become part of the potato



22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes, this could cause the thermohaline circulation process to slow down. Thermohaline circulation depends on the cold Arctic regions. Polar waters are already very salty and cold, so if the ice contained more salt than the polar waters, the ice would become more dense due to its mass being greater. Solar energy causes the movement and transformation of water because all energy derives from the sun. If the ice melted, this would increase the salt content of the water substantially. Wind drives water currents, so if the surrounding water contained even more salt than it already has, thermohaline circulation would slow down due to the wind circulating the water at a slower rate. Part of this would be because the water would have different densities between water masses due to the salt content.

20

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 44

YOUR SCORE:

84

STUDENT ID #: AB9527805; GROUP #: 3

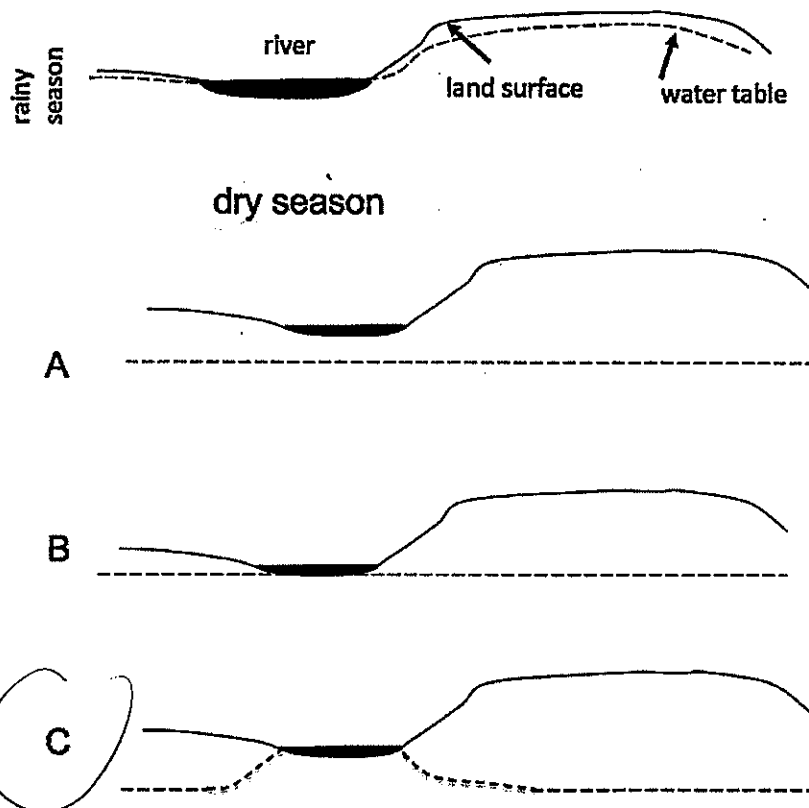
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
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c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A39527865

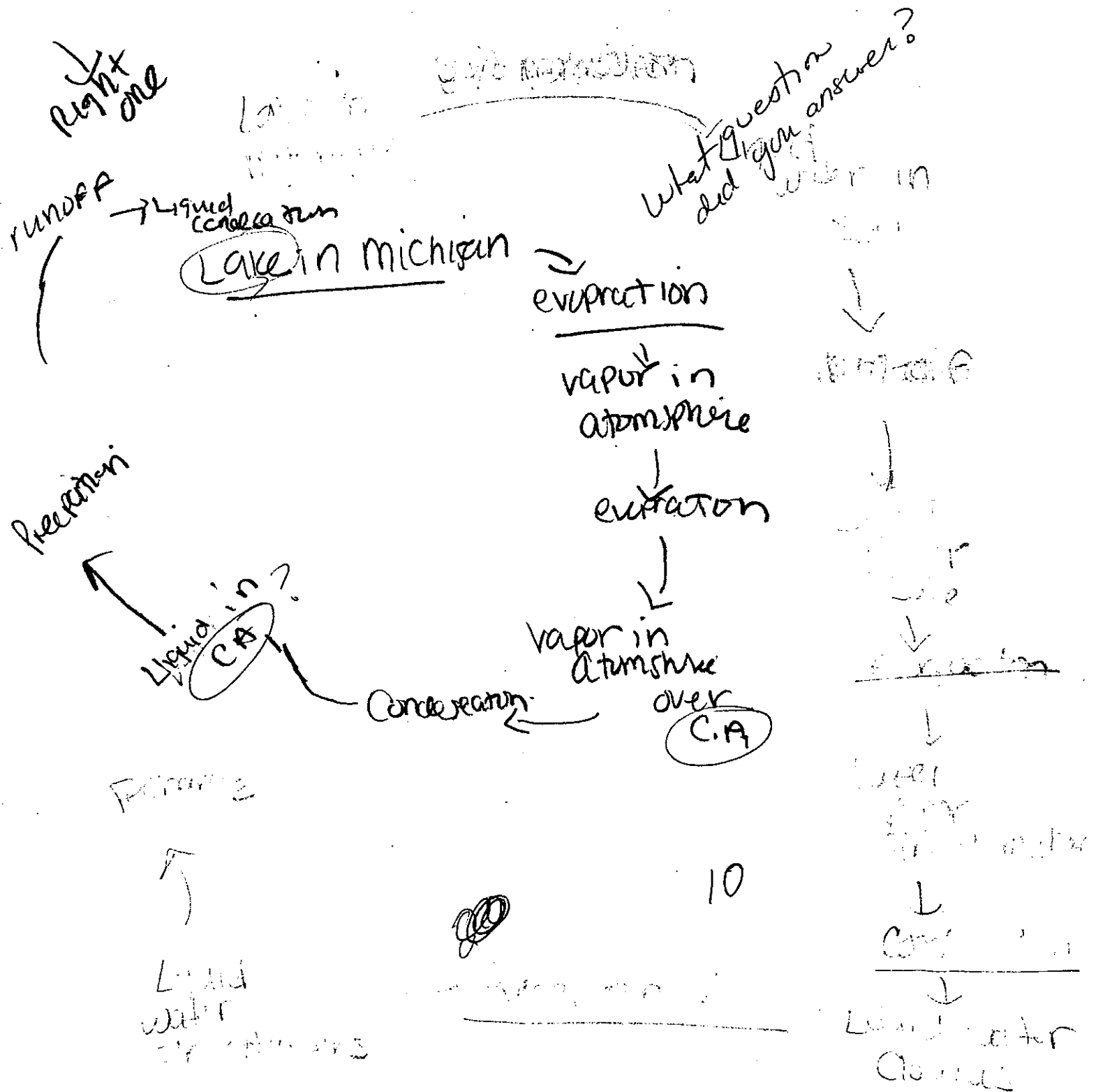
ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

2

Because warm air is less dense than cold air and air temperature changes according to the position of the ocean. At low latitudes, air is warmer so it will rise and when it is higher air is colder. And since air cool as it rises so air in the upper atmosphere sinks and replacing warmer air in the lower atmosphere.

EXTRA CREDIT (2 points)

EC How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

See me.

50 12

YOUR SCORE:

62

STUDENT ID #: A42005463; GROUP #: 3

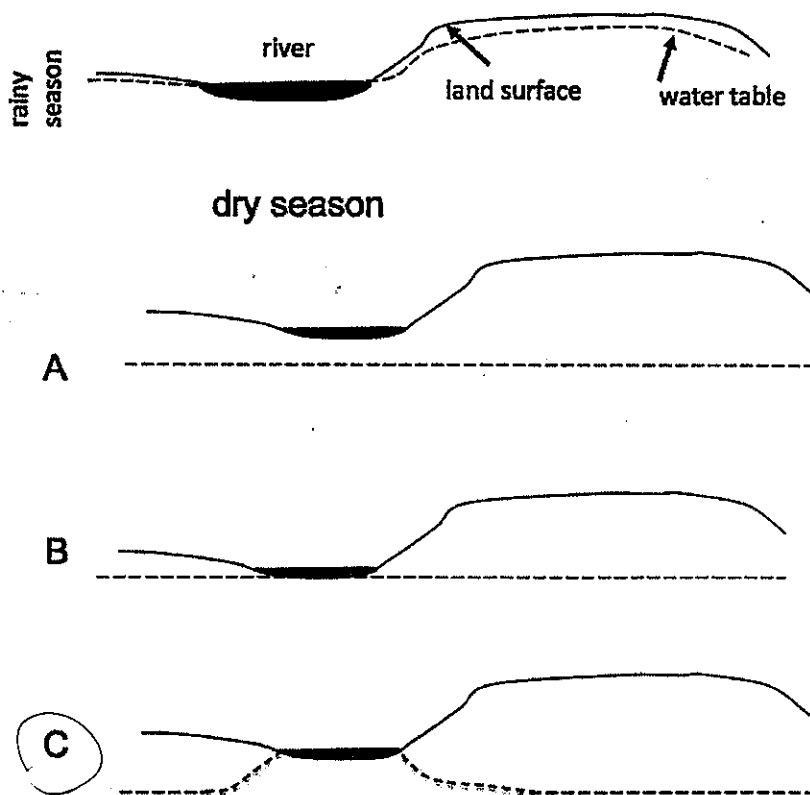
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

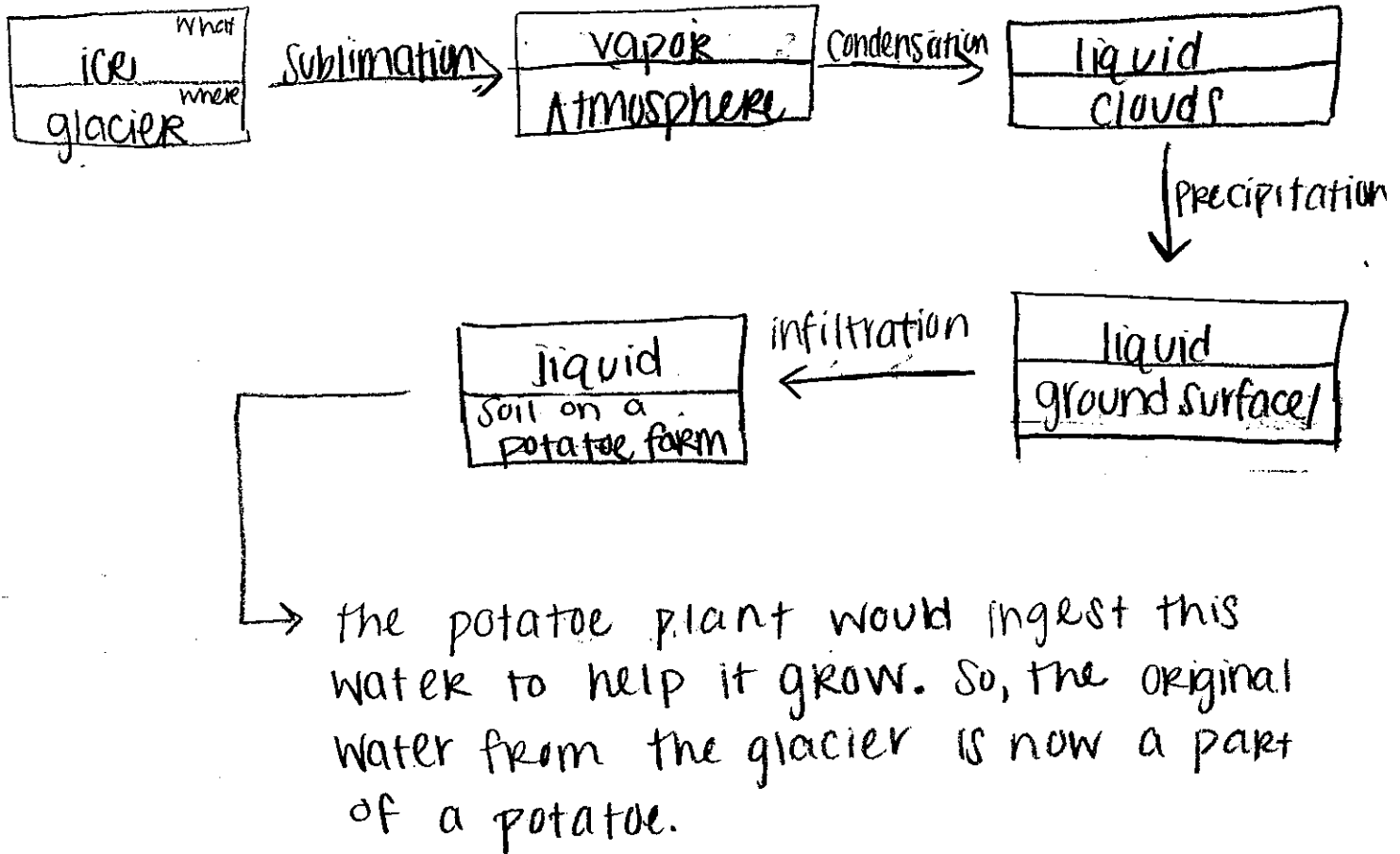


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42005463

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes, it would disrupt the thermohaline circulation. If the polar ice caps were to suddenly melt, they would release all that salt into the ocean. Upon the release of the extra salt, this would increase the thermohaline circulation. because salt water is more dense so it would increase the rate at which the cycle takes place. This circulation happens due to the warm and cool temperatures of the ocean and the density & buoyancy of each temperature. Cool water is more dense so it plummets to the bottom of the ocean until it begins to warm and rise. So, the increase in salt would increase the density causing the water to sink and cool. &?

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

45 37
YOUR SCORE:
82

STUDENT ID #: A42405167; GROUP #: 3

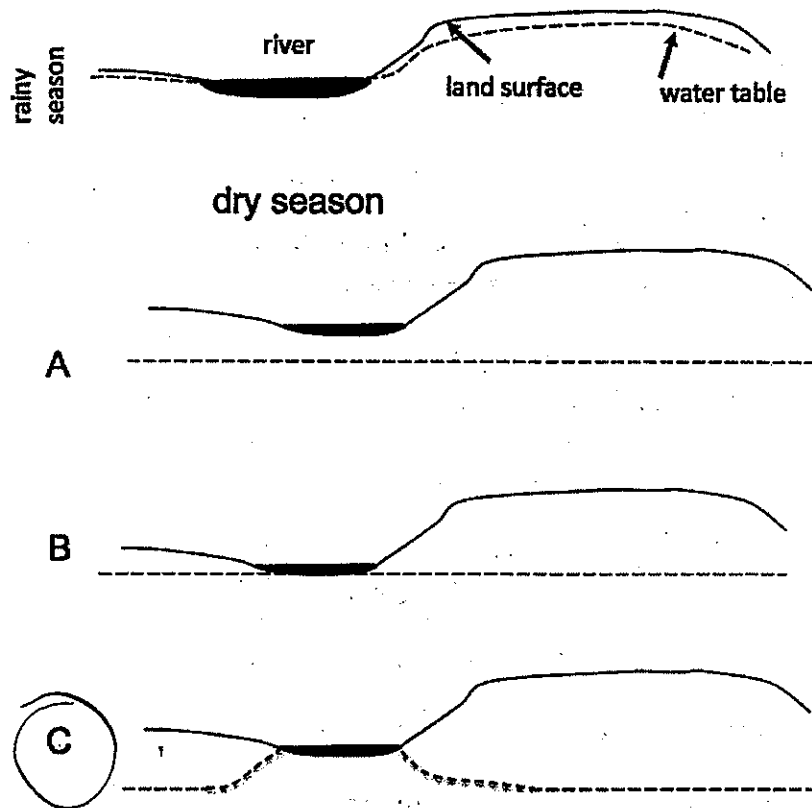
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



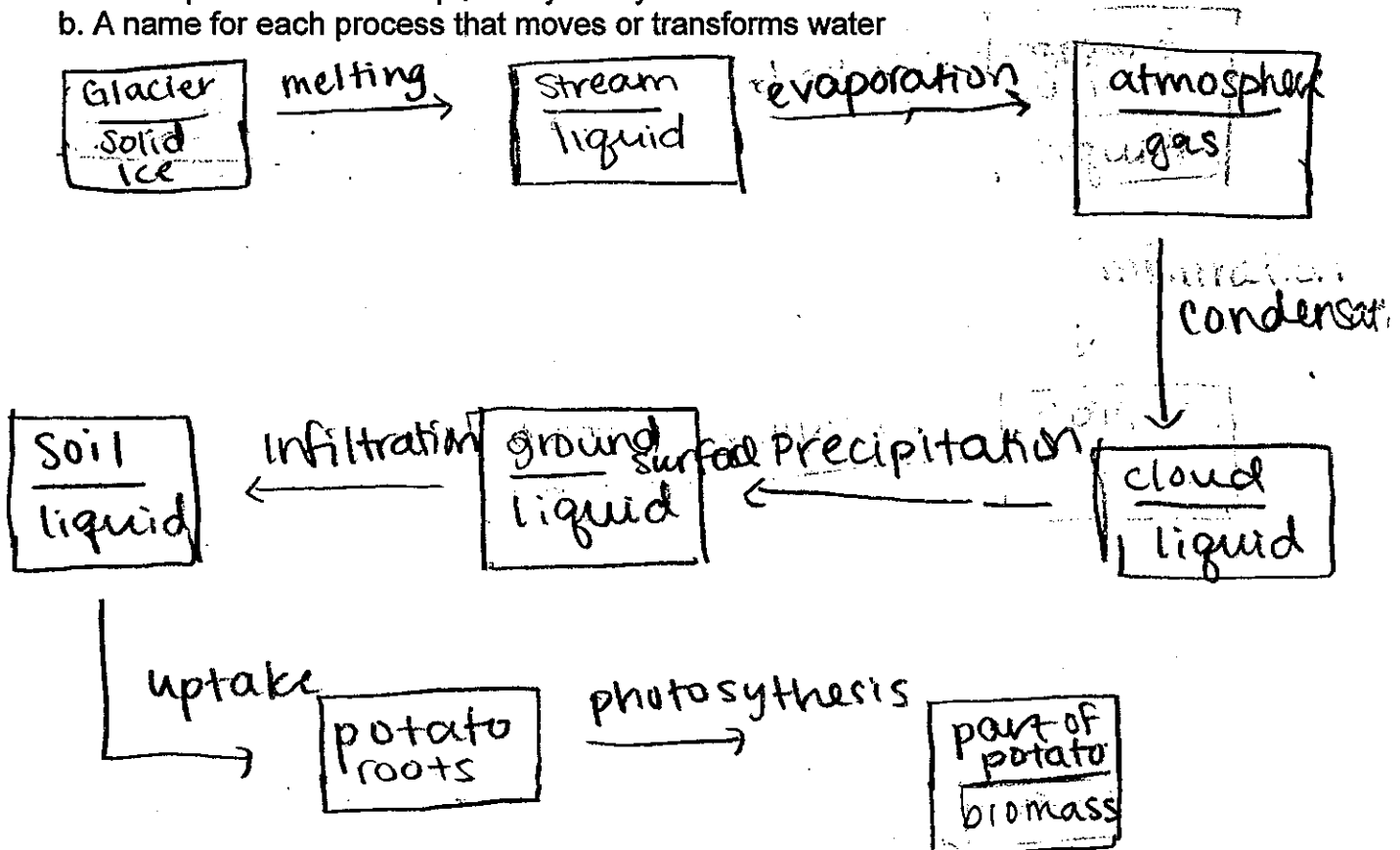
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42405167

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

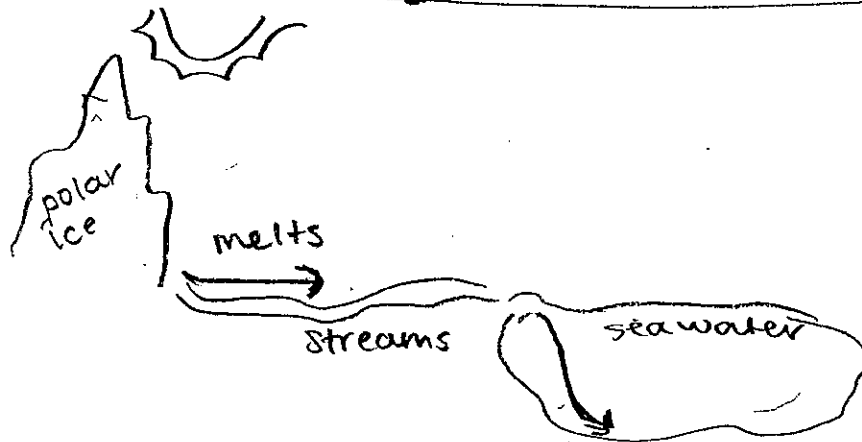


25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If the polar ice were to melt and discharge off into the oceans some of this salt would also enter the seawater. This new water would sink because of the greater density creating more of the colder denser water in the bottom of the oceans slowing down the thermohaline circulation



8 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 37

YOUR SCORE:

82

STUDENT ID #: A42818831; GROUP #: 3

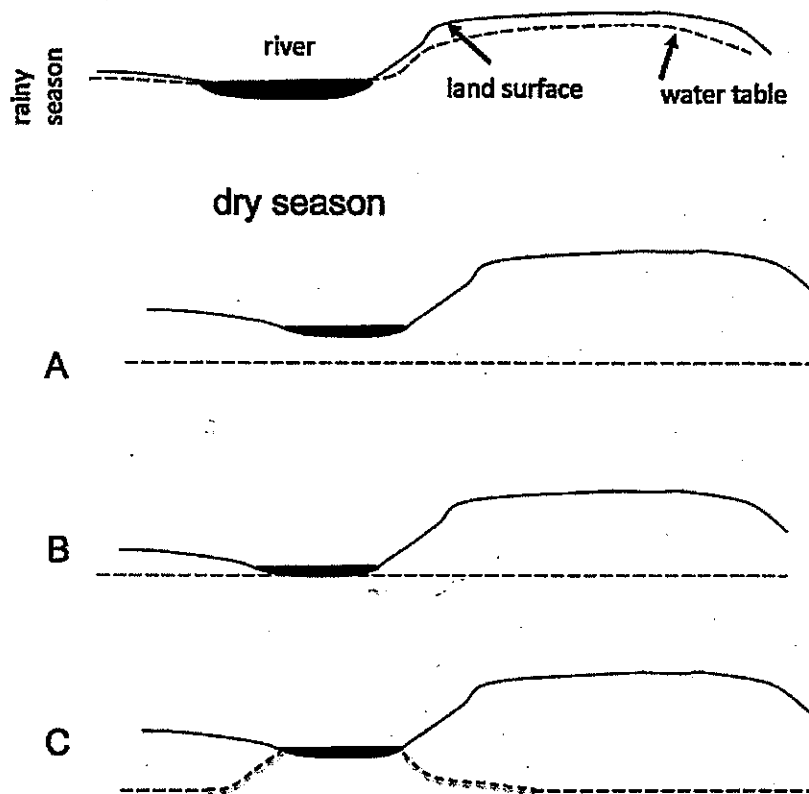
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



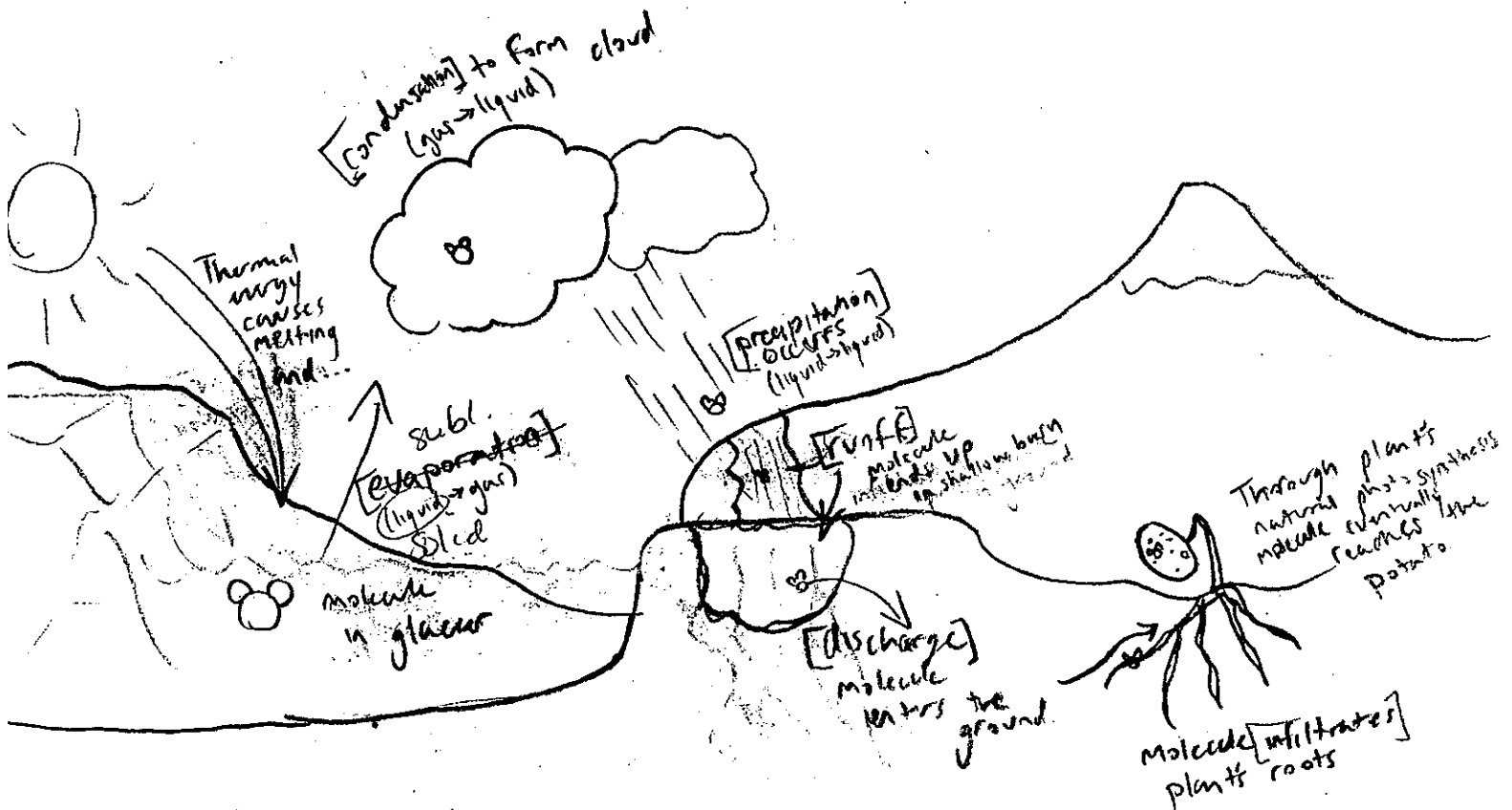
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A42818831

SHORT ANSWER. 25 points each (50 points total)

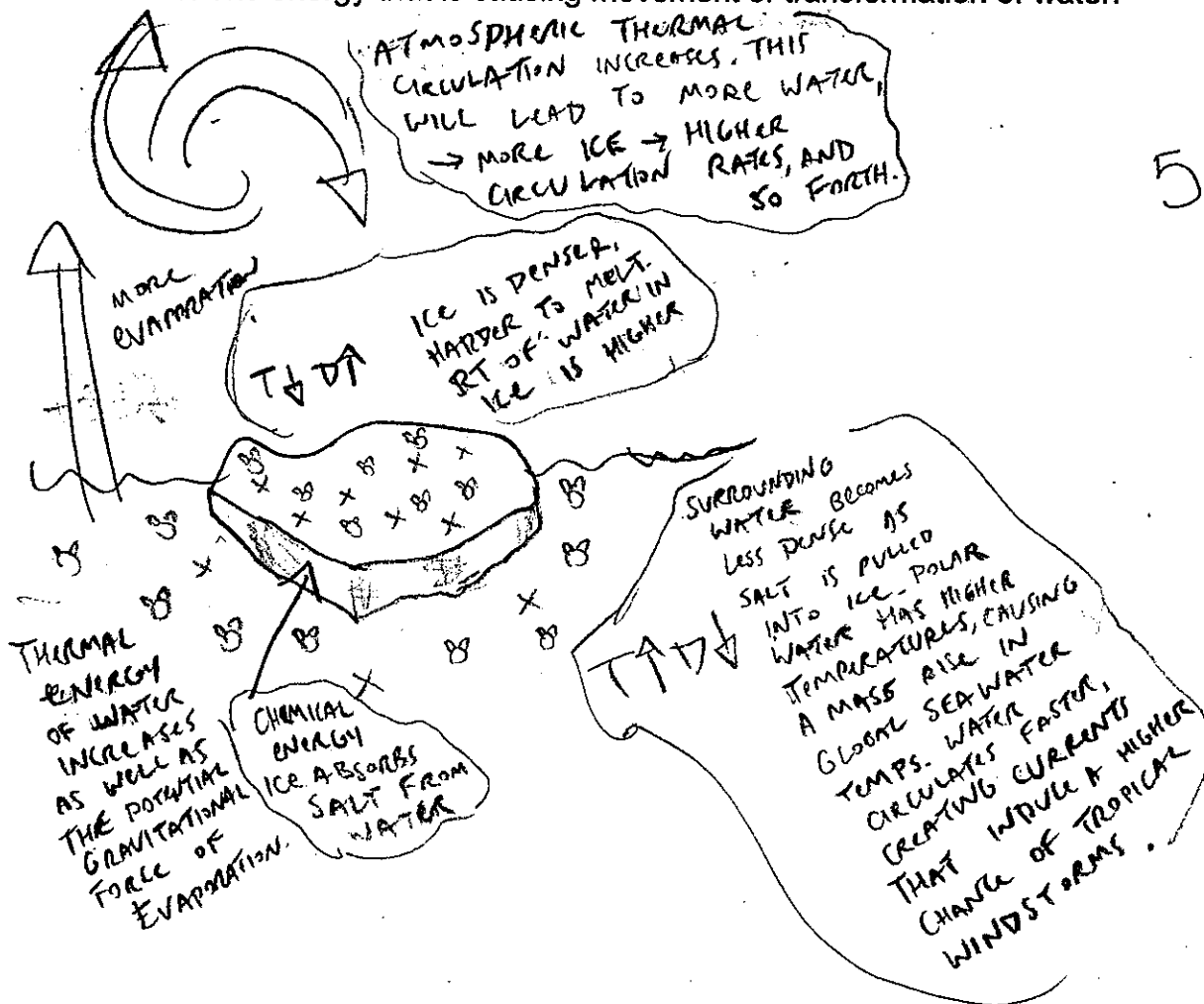
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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- The energy that is causing movement or transformation of water.



EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 29

YOUR SCORE:

64

STUDENT ID #: 43296853; GROUP #: 4

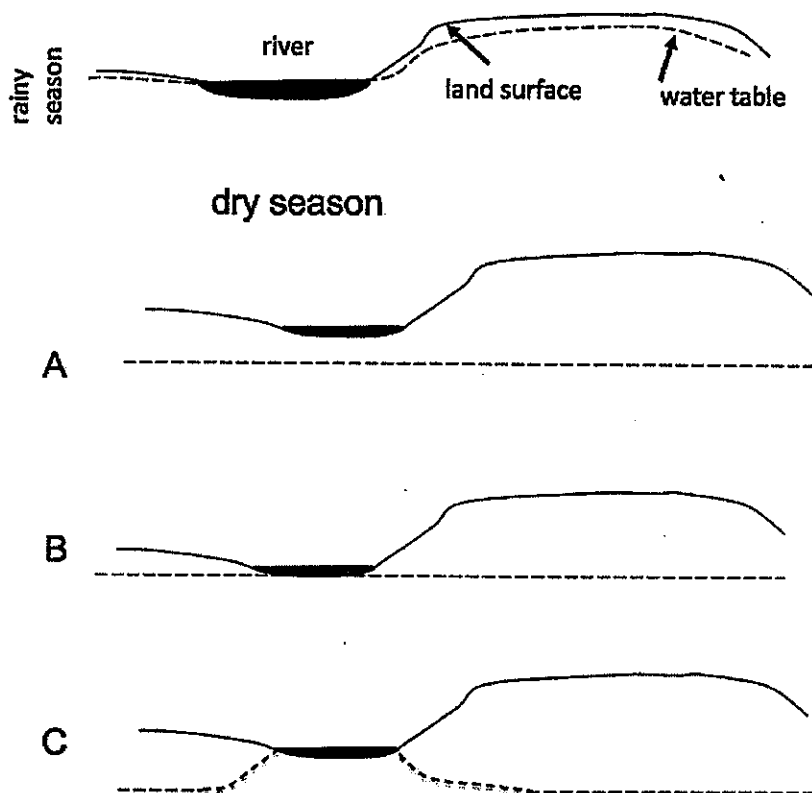
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
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 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
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 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



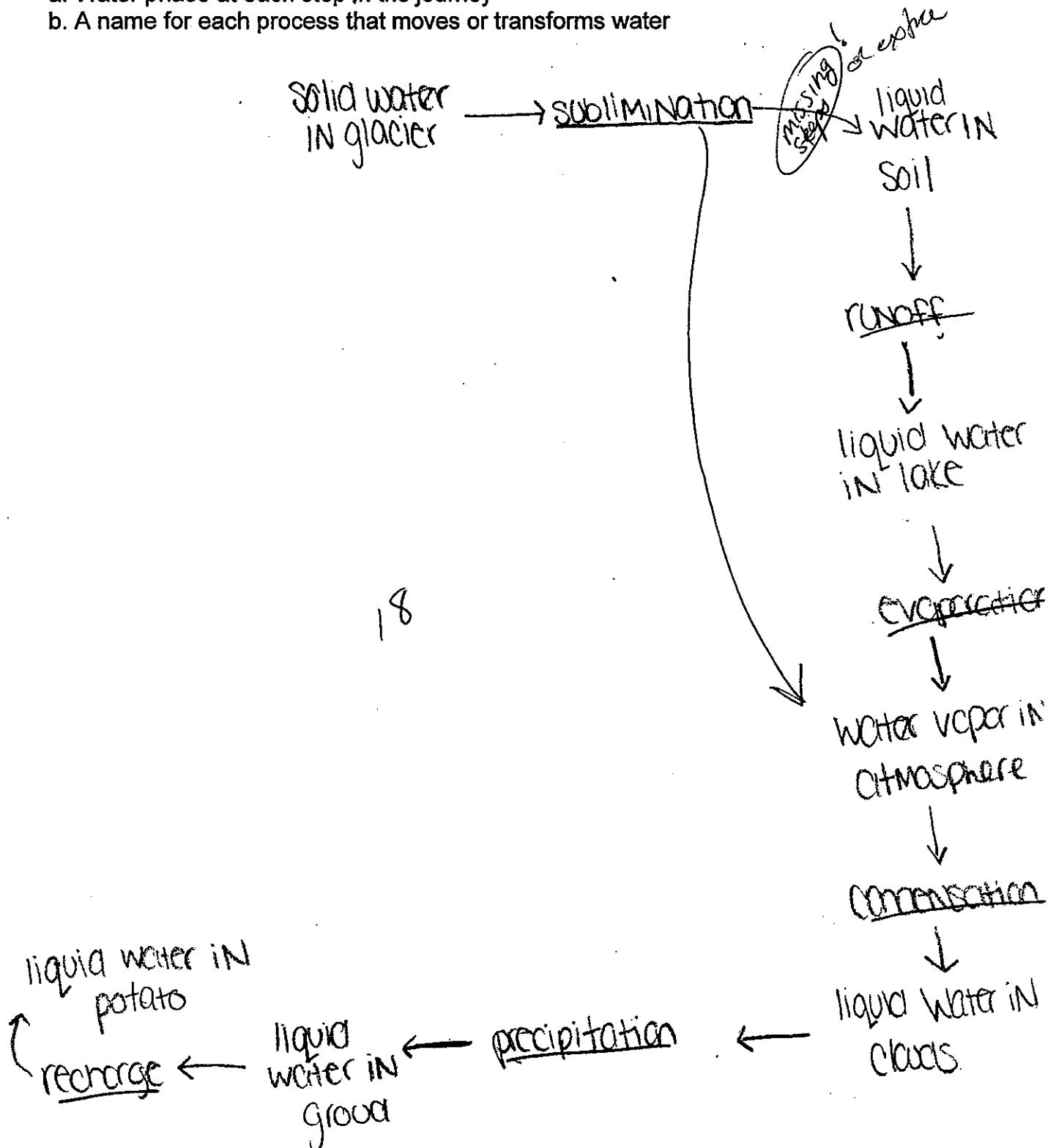
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43296853

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



223294541

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation takes place because warm air is less dense than cool air. So when warm air is in the atmosphere it rises till it finally cools then returns back down. If polar ice contained more salt than the surrounding seawater then the thermohaline circulation would change due to the fact that the thermal NRE need to circulate the waters would have to increase because the ice has become more dense.

2

~~EXTRA CREDIT (2 points)~~

~~EC. How are burning wood and respiration similar?~~

- ~~a. They both destroy matter during energy conversion~~
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 20

YOUR SCORE:

50

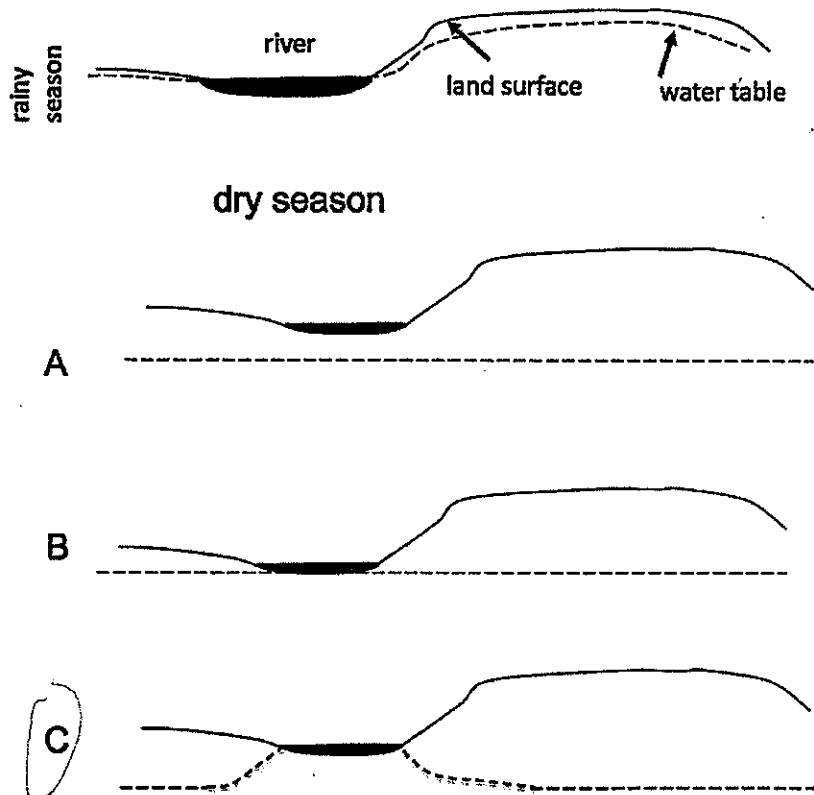
STUDENT ID #: A42460239; GROUP #: 21
actually 9 → 4**MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.**

1. What happens when water molecules condense? 6
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of grav A energy. Water in the atmosphere becomes water in clouds as a result of B energy. Water in clouds becomes water in the atmosphere as the result of C energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less ✓
- c. remained the same



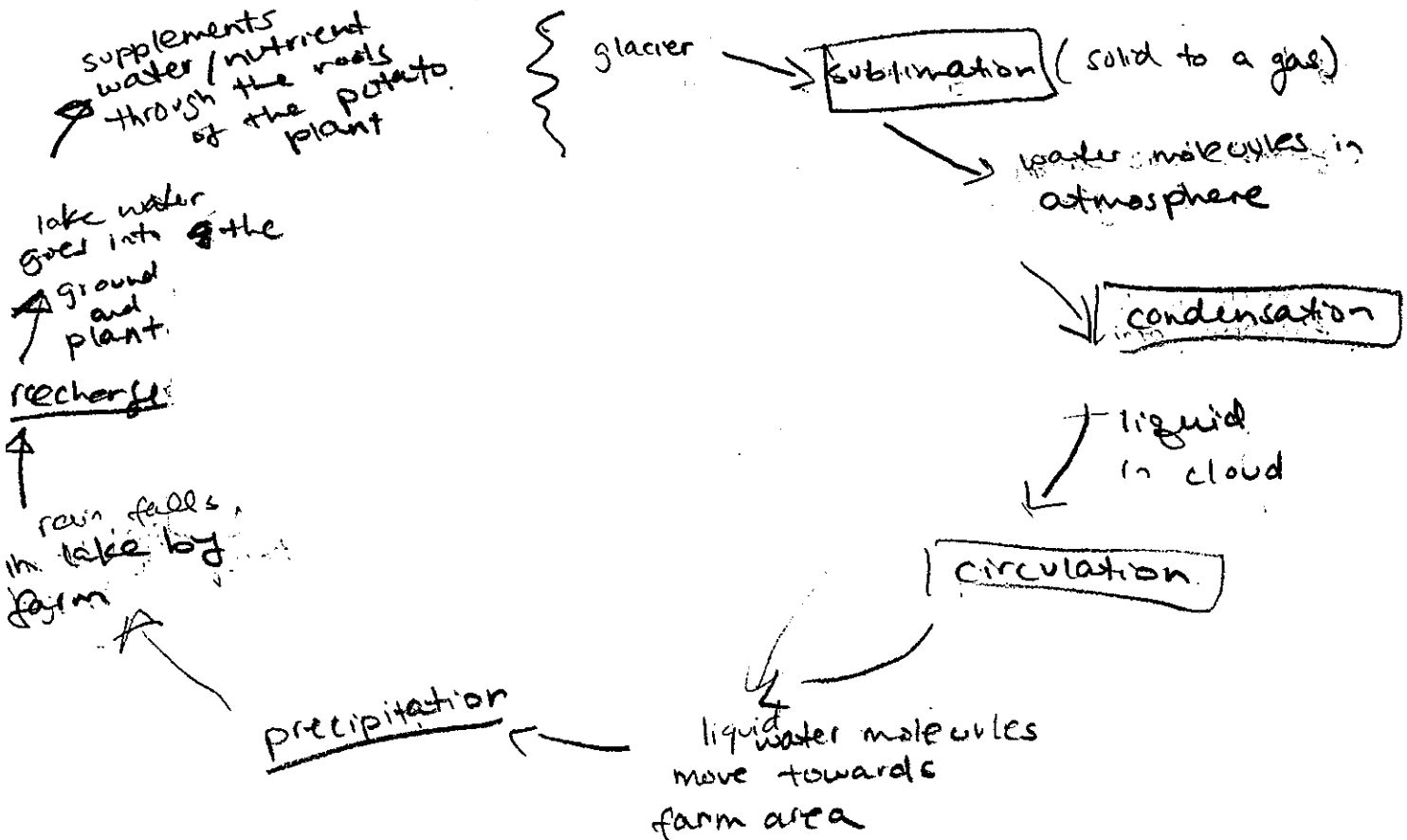
10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

A 42 460239

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because of the different densities of hot / cold air and water. Cold air is usually more dense while hot air is less dense and rises. Furthermore, when hot air rises, it cools and replaces cooler waters and process become a continuous cycle.

Thermohaline circulation would change if polar ice contained more salt than the surrounding sea water because salinity is ~~one~~ one of the factors that changes density in water. Ice is less dense than ^{warm} water and salt water is more dense than freshwater. No longer would warm currents be able to circulate to polar regions and allow the colder water to warm up the warmer (equatorial areas) and thermohaline circulation would eventually cease.

25

chemical energy → salt is added transforms water into salt water

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 10

YOUR SCORE:

80

STUDENT ID #: A42288544; GROUP #: 4

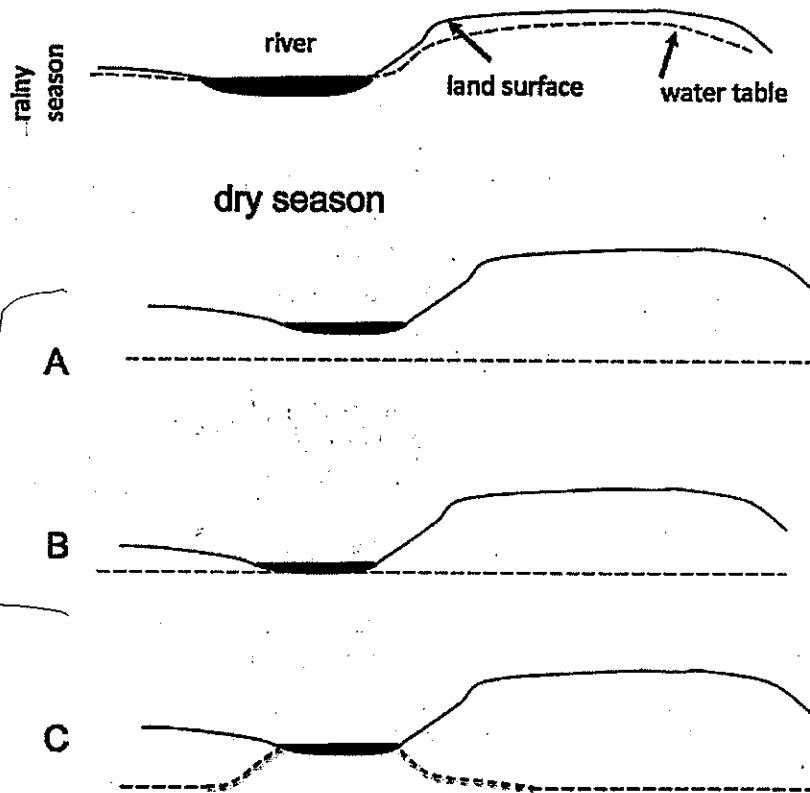
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - ✓ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ✓ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
- ✗ 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. ~~Liquid water from the pot evaporates~~
 - ✓ c. Water vapor from the pot condenses
 - d. ~~Water vapor from the pot evaporates~~
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming ✓
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
- ice floats in H₂O*
ice has lower density

10. What happens when plants respire?

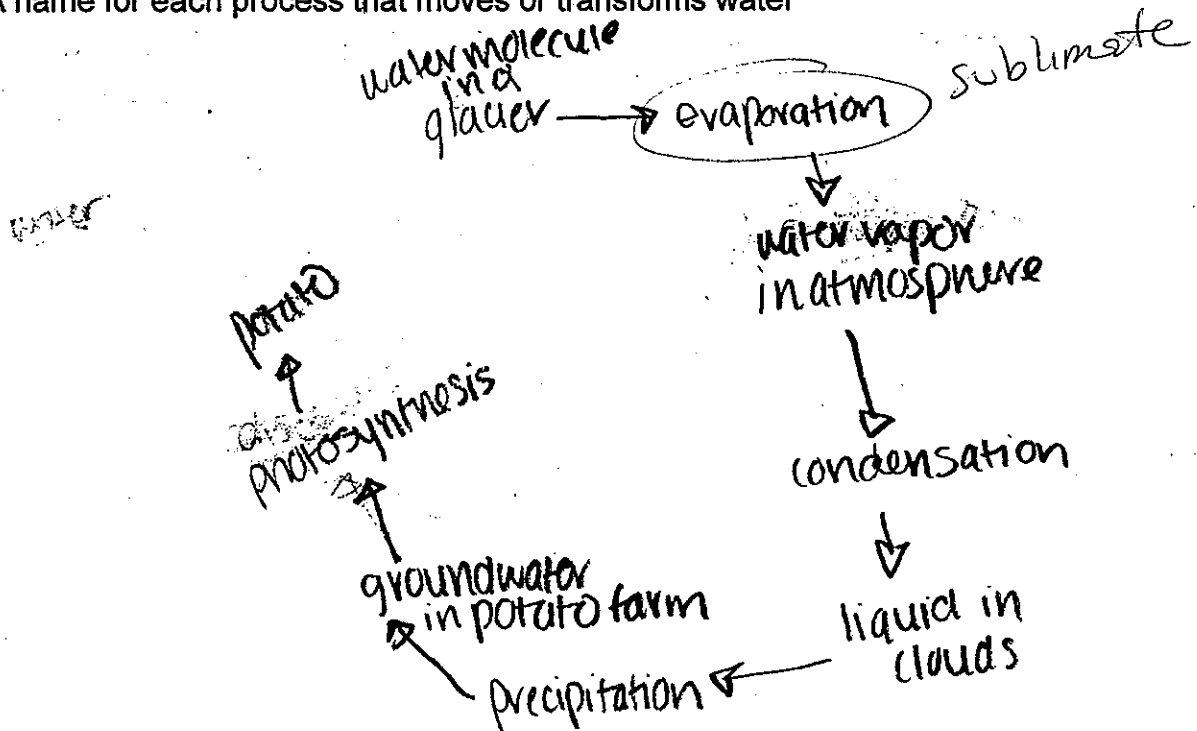
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy
- CO₂ to O₂*

A 42288544

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



The water molecules move from glacier through evaporation to the atmosphere. then they condense to become liquid in clouds + then fall as precipitation. then they become groundwater in the potato farm. the water is sucked up through roots + used during photosynthesis as energy.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If polar ice contained ^{more} salt, they would be less dense than they already are. Because they contained more salt than surrounding sea water it would float on top more. This colder water would change the thermohaline circulation which depends on oceanic temperatures + wind currents. As warm water rises + cold water sinks, the ice would affect the overall temperature of the seawater. The circulation which brings warm waters in from equator through wind currents affected by temperature + density of water, would be thrown off causing water to cool faster over polar ice caps and the overall temperature would be cooler.

Ⓟ

5

7 EXTRA CREDIT (2 points) respiration = in 102 out 02

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 29

YOUR SCORE:

59

STUDENT ID #: A42115313; GROUP #: 5

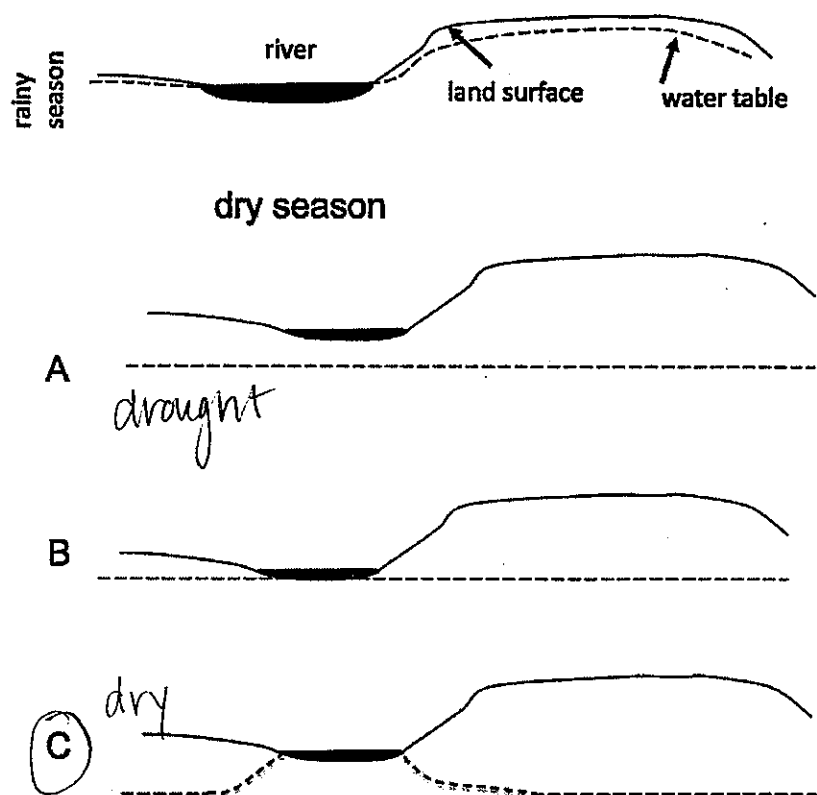
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
~~a. Water molecules become larger~~
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☒ a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
~~c. Ground water from beneath the surface~~
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
☒ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
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- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
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 - b. been less
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10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A water molecule from a glacier will eventually evaporate into the atmosphere where it then condenses into a cloud. Then precipitation will occur causing the water molecule to fall back down to the earth where it will go into a reservoir. In this case the water molecule goes into the groundwater of a potato farm where the roots eventually soak up the molecule & use the water to grow a potato.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

thermohaline circulation: warm water from equator flows & mixes with cool polar water.

Thermohaline circulation happens because the sun's radiation is stronger at the equator. This causes wind circulation which influences the oceans circulation as well, resulting in the warm equatorial ocean currents flowing towards the poles. If polar ice contained more salt this would not change thermohaline circulation because it has no effect on the sun's solar radiation which is the energy that causes the coriolis effect. 15

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 37

YOUR SCORE:

72

STUDENT ID #: 182 A40004959; GROUP #: 5

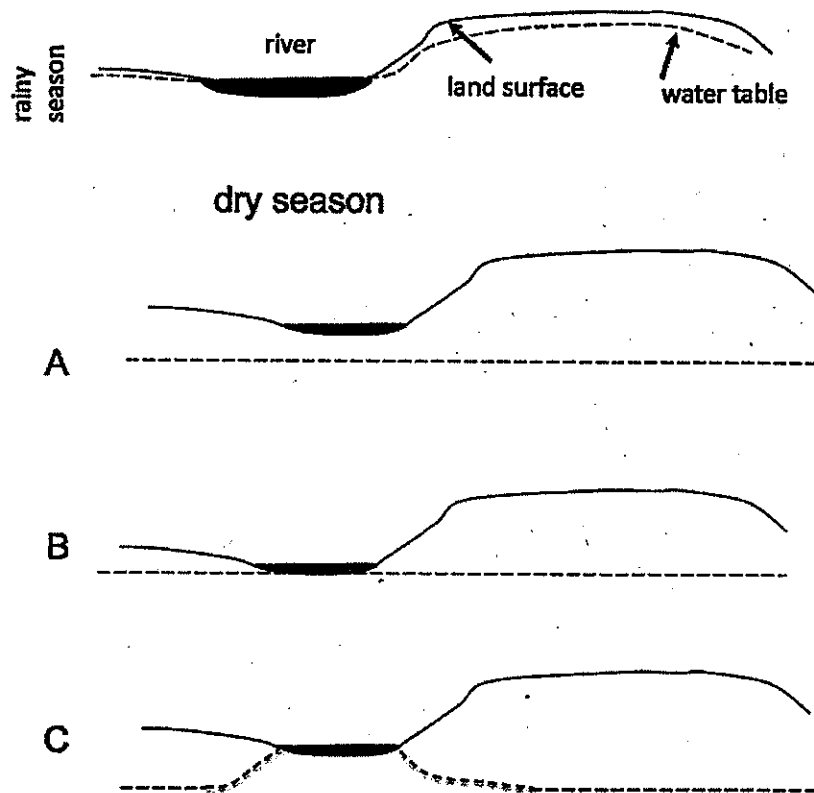
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____A_____ energy. Water in the atmosphere becomes water in clouds as a result of _____B_____ energy. Water in clouds becomes water in the atmosphere as the result of _____C_____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater - Because of displacement?
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A40004959

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

There are many ways in which a water molecule could move from a glacier to a potato. To spare my self from embarrassment, I won't be drawing, rather I will write how this happens. During the spring thaw, the water molecule (WM) is released from its bonds in ice through thermal energy; it melts ^{becoming liquid}. It then travels down the mountain as runoff pulled by gravity. At some point, after passing through mighty torrents and maelstroms, the molecule is heated and it evaporates, becoming water vapor. The molecule rises and rises, getting cooler, until it condenses into liquid water, a part of a cloud in a major storm front. It moves from the mountains to a lush field in Idaho, where gravity pulls it down, in what's called Precipitation. It lands near a potato, where then it sinks into the ground through a process called sublimation and then is sucked into the potato to be used in photosynthesis.

| where | form | process |
|---------|-------------|---------------|
| Glacier | Ice | |
| river | liquid | runoff |
| river | water vapor | evaporation |
| Cloud | liquid | condensation |
| air | liquid | Precipitation |
| ground | liquid | sublimation |

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The circulation would change in that the water melting off the glaciers would be denser than that of the water surrounding it, making it sink to the bottom. Circulation happens because as the waters near the equator are warmed, the warmer water rises, it flows towards the poles because of gravity or something, where it gets cooler and sinks to the bottom. Therefore if the water coming off the glaciers were saltier, it would screw up the whole system.

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: 40659472; GROUP #: 5

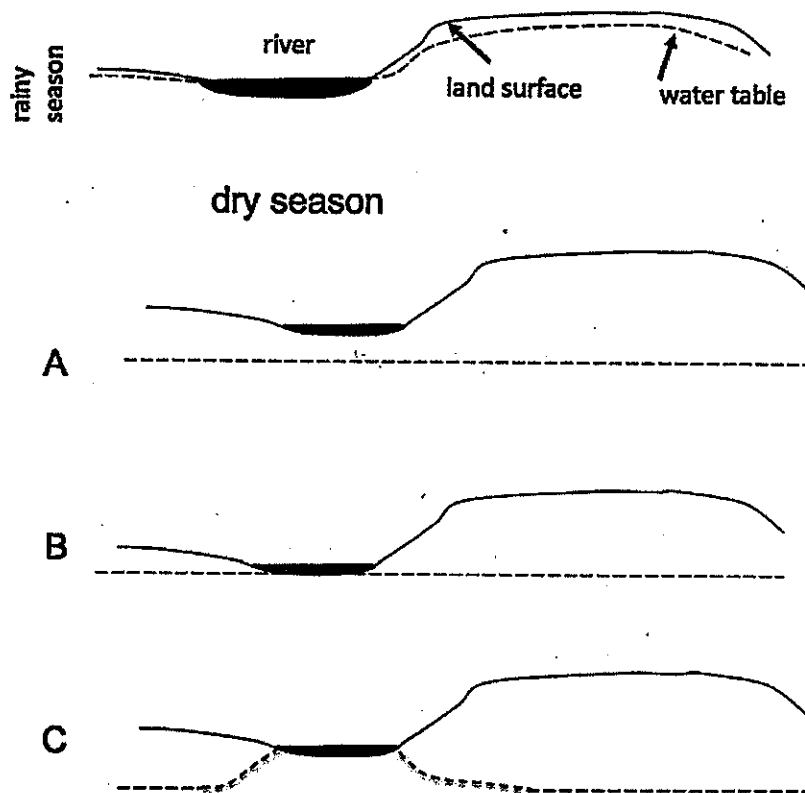
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 6
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
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 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
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 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - ☒ b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- a. Water phase at each step in the journey
- b. A name for each process that moves or transforms water

The water molecule will start off in a glacier. As the glacier melts, gravitational energy will discharge the water to surface water and eventually to ground water. The ground water will recharge into a nearby lake where thermal energy will force its evaporation into the atmosphere. Thermal energy will then cause the water to condense itself into a cloud, which gravitational energy will cause to precipitate. Once the water has reached the earth gravitational energy will once again discharge it to groundwater where it will eventually recharge into a nearby aquifer. The aquifer is being used by a local potato farmer and the water will be used to water his crops. Through transpiration, the potato will gather the water.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline Circulation is the process of water and air circulating from the equator to the poles and back again to the equator. This circulation occurs due to changes in density due to thermal energy.

If the ice contained more salt than the surrounding seawater then the areas would become more dense from the melting ice being saltier. The added density would slow down the thermohaline circulation, as denser water is more likely to stay at the poles.

25

EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

30 43

YOUR SCORE:

73

STUDENT ID #: A40555917; GROUP #: 5

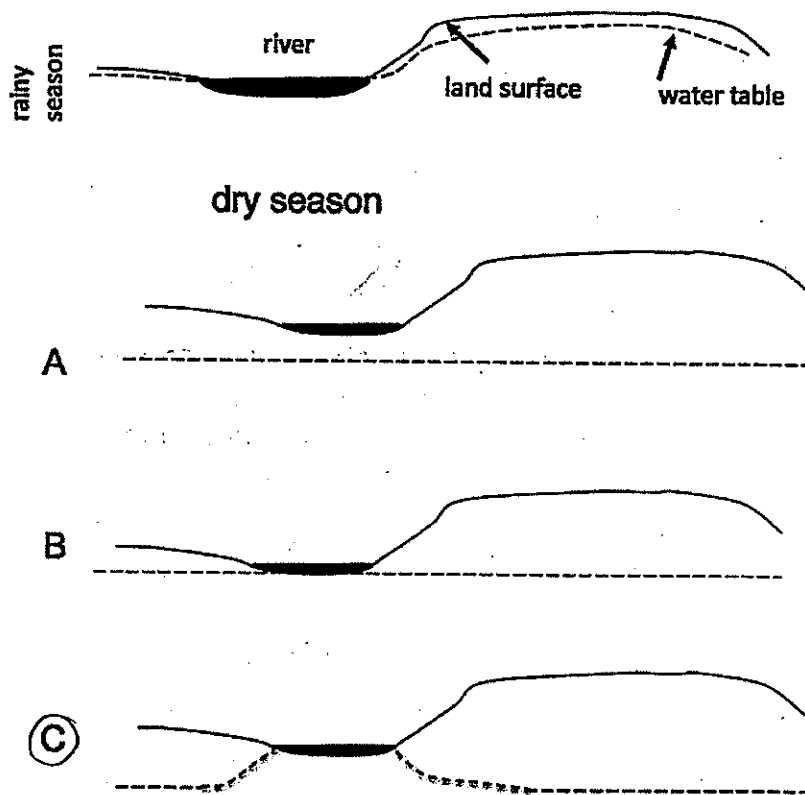
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
☒ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☒ a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☒ a. Liquid water from the pot condenses
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c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ~~a.~~ A = chemical, B = thermal, C = thermal
☒ b. A = gravitational, B = gravitational, C = thermal
 c. A = gravitational, B = thermal, C = thermal
~~d.~~ A = thermal, B = thermal, C = thermal

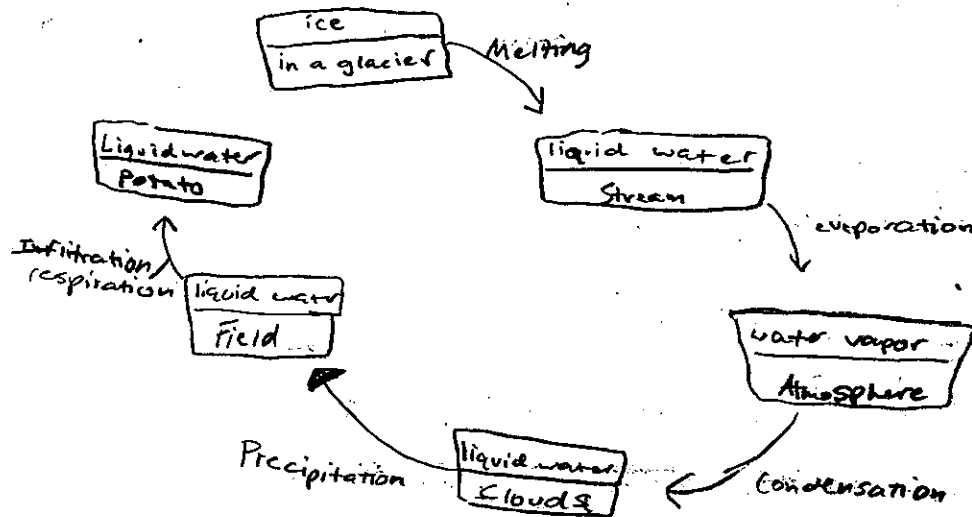
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 b. been less
~~c.~~ remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
☒ b. Plants convert energy into biomass
 c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water



1. Ice in a glacier melts to liquid water in a stream.
2. This water evaporates to form water vapor in the atmosphere.
3. This water vapor condenses to form liquid in clouds.
4. This liquid water precipitates onto a field that is growing the potatoes.
5. This surface liquid water infiltrates into the roots/stems of the potato.

6. TA - DA !!

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation happens because hot air is less dense than cold air, so hot air rises and cold air sinks creating a circular motion like this one.



Thermohaline circulation in oceans would change if the polar ice contained more salt than surrounding sea water from which it freezes because if the ice was more dense there would be more fresh water in the oceans. This would cause more evaporation b/c there is less salt holding it back. The water cycle would be the same but there would be more water and less glaciers.

7 < 80
Salt 80

15

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 42

YOUR SCORE:

72

STUDENT ID #: A426000605; GROUP #: 6

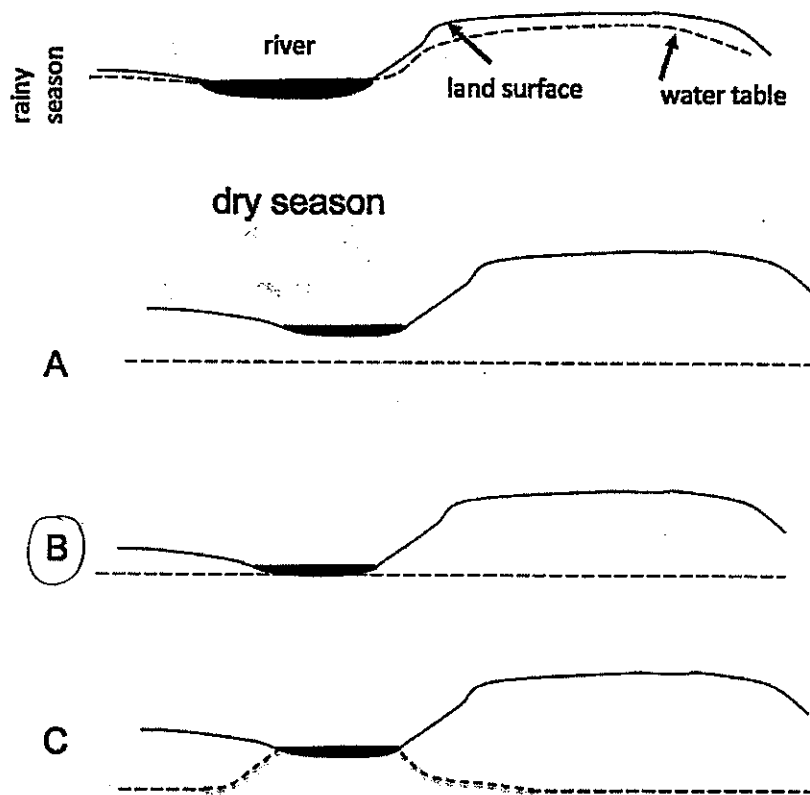
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
☒ c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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☒ c. Glaciers
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3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
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b. A = condensation, B= precipitation, C= evaporation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

2

Thermohaline circulation in Oceans would change if polar ice contained more salt than the surrounding sea water because firstly ice is less dense than water. If the ice contained more salt it would create many other bodies of water to become salt water areas. This is because along w/ the process of ice comes melting and evaporation. The melting water would just add to the sea water while the evaporating water would end up in the atmosphere and eventually become liquid in a cloud w/ this process also comes precipitation. Precipitation would be concentrated w/ the salty water and when pulled back down to the atmosphere through gravity and rain would create many other areas to be concentrated w/ the salty water such as streams that would run off into lakes or other reservoirs and eventually infiltrate into the soil. ^{does not evaporate}

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 20

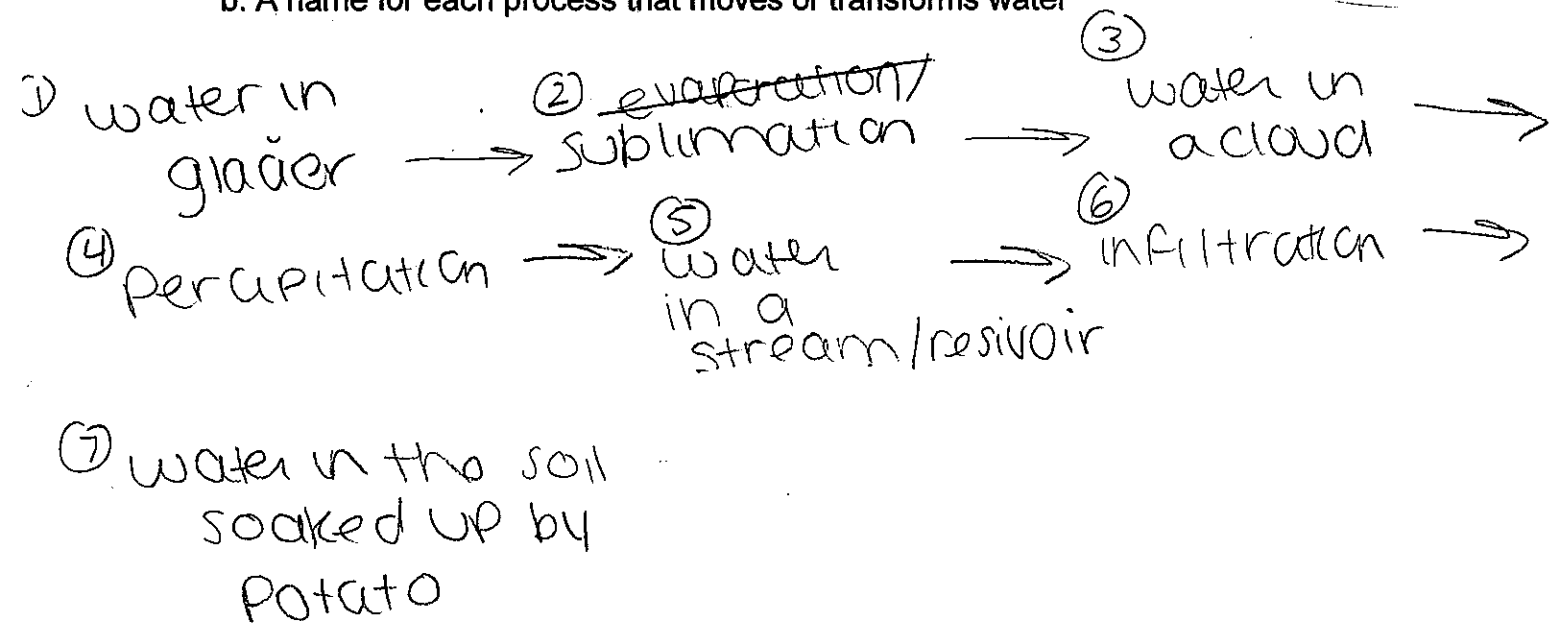
YOUR SCORE:

50

SHORT ANSWER. 25 points each (50 points total)

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- Water phase at each step in the journey
- A name for each process that moves or transforms water



~~James H. Sibley~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42205094; GROUP #: 6

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

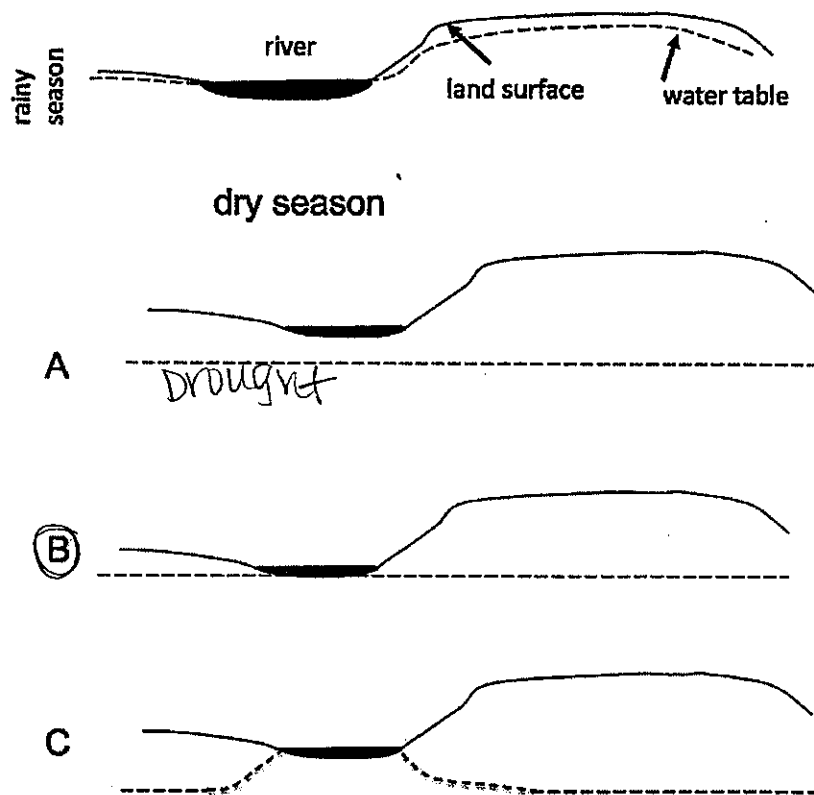
1. What happens when water molecules condense? 6
 - ~~a.~~ Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
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3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - ~~a.~~ A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
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 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - ~~c.~~ Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

grav. therm. grav.

- ☐ A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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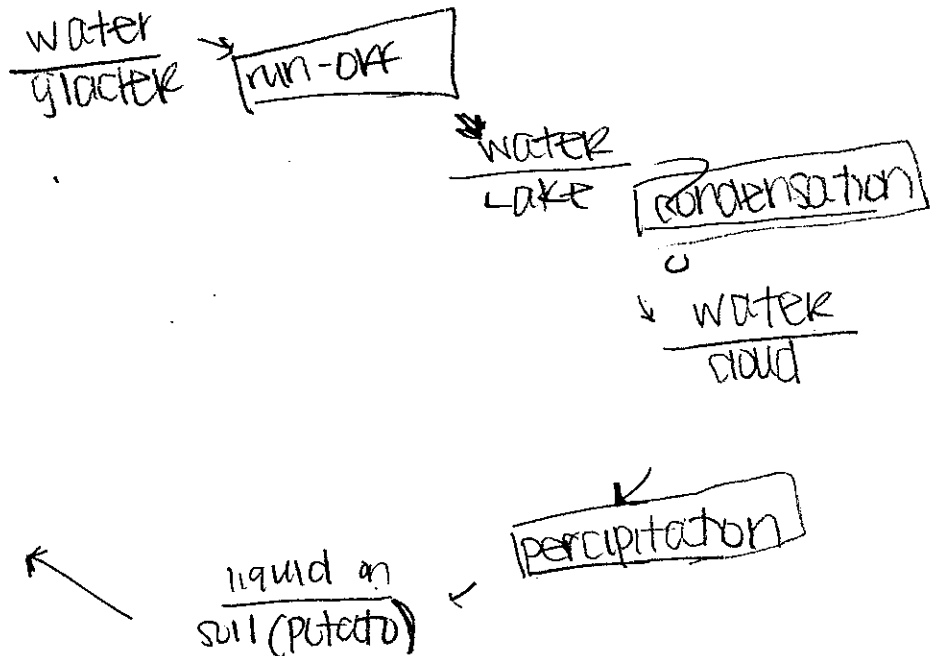
A4122050941

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Thermohaline circulation would change because salt water would then become more dense than clean water and it could potentially cause harm. The polar ice caps would no longer be the main freshwater reservoir and the animals feeding off it will begin getting/intaking too much salt. Circulation happens to keep things in a reasoning flow and help to maintain. The energy within the transfer of the air and the glacier caps is thermal and gravitational.

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 12

YOUR SCORE:

42

STUDENT ID #: A43763919; GROUP #: 6

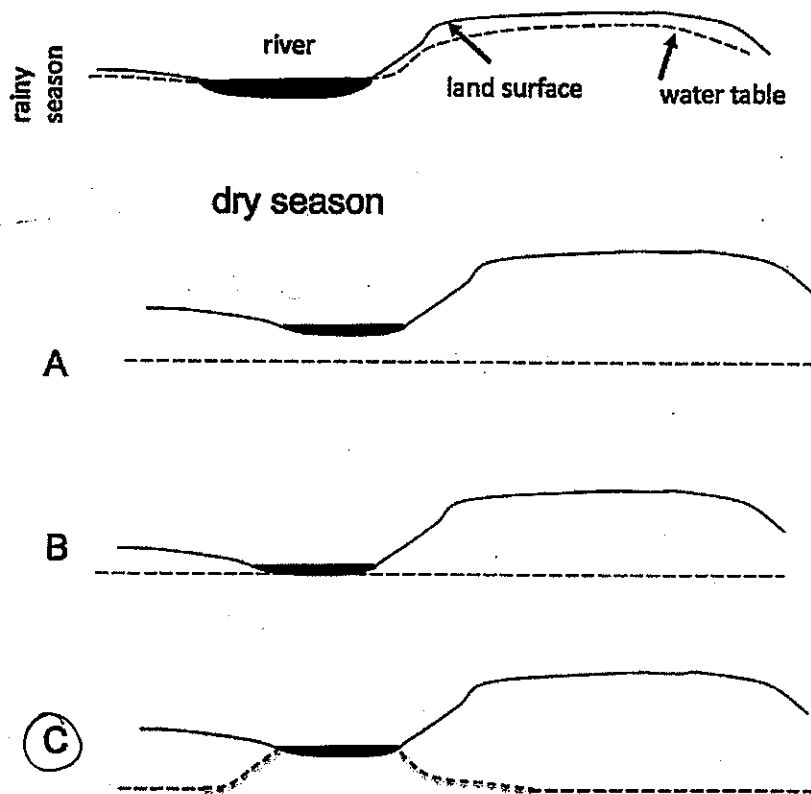
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
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c. Glaciers
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d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water

Beginning with a H_2O molecule from a glacier it melts & moves to ocean, lake stream or other groundwater source. Then through the process of runoff & discharge that molecule moves in liquid form from one groundwater source to another. From that source, water then evaporates from the groundwater source, becoming a vapor & moves into the atmosphere. It then condenses to form a cloud & then gravity pulls that H_2O molecule back down towards earth as rain used to water the potato crop. That molecule sinks into the ground & becomes soil water & is then used by the potato plant to grow.

25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- b. The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater from which it freezes then that would mean that the rest of the surrounding water would be at a higher temperature. Removing the salt from the surrounding H₂O would require more thermal energy to keep it from freezing, so therefore it would have a higher kinetic thermal energy.

2

2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 29

YOUR SCORE:

64

STUDENT ID #: A39966164; GROUP #: 6

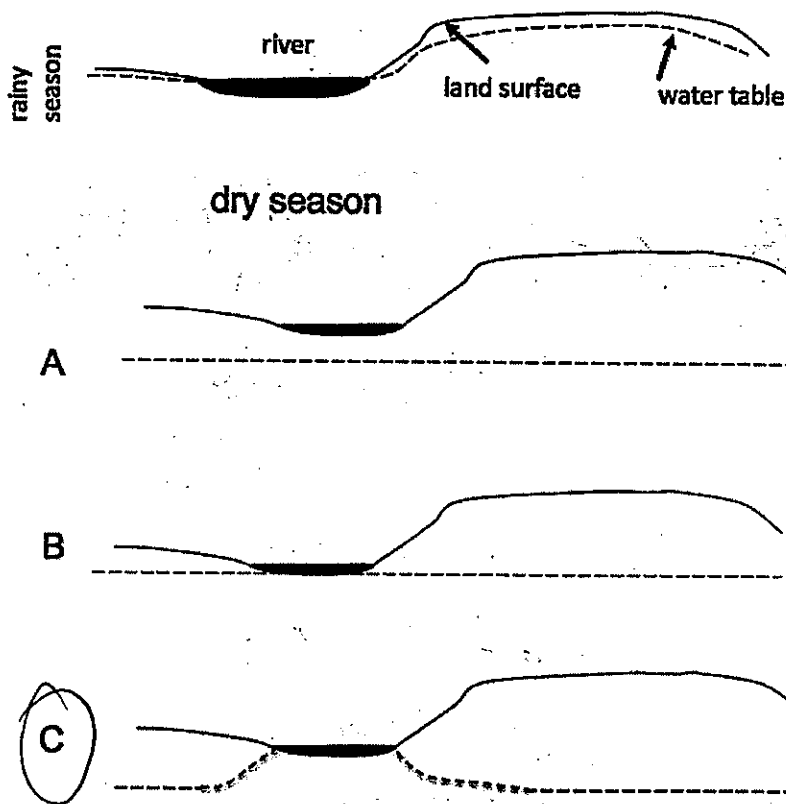
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 10
1. What happens when water molecules condense?
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
☐ a. Liquid water from the pot condenses
☐ b. Liquid water from the pot evaporates ✓
☒ c. Water vapor from the pot condenses ✓
☐ d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
☒ a. This is what one would predict with global warming
☐ b. This is the opposite of what one would predict with global warming
☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
☒ c. A = gravitational, B= thermal, C= thermal
☒ d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
b. been less
c. remained the same
- * 10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

A39966164

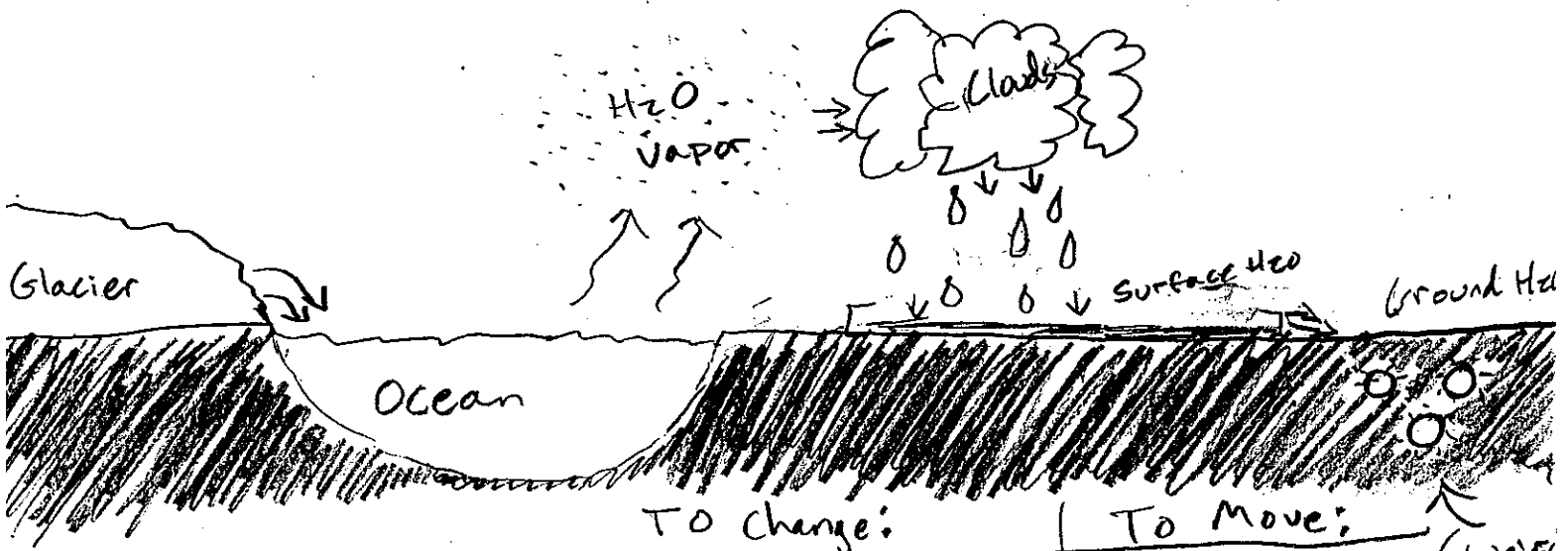
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

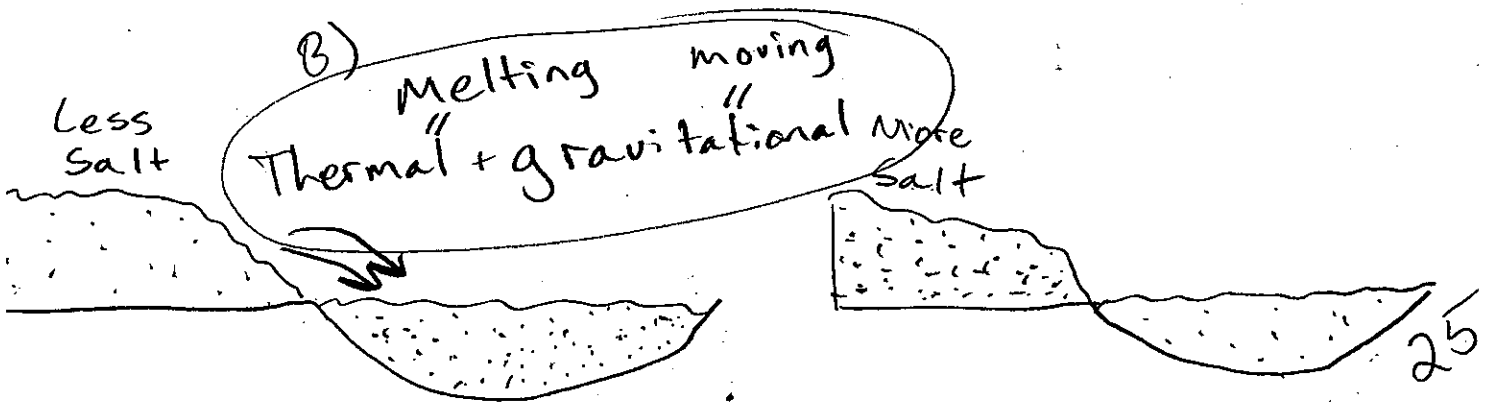
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



18

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.



A) Thermohaline circulation occurs because as glaciers freeze, they release salt into the oceans below. The salt (in mass quantity) sinks to the bottom of the ocean floor and continues to flow (with cold water; to more tropical regions where the water becomes warm and flows back to colder regions, regulating world-wide ocean temperatures. If glaciers suddenly began keeping more of the salt, the underwater current created by freezing glaciers would become weak possibly to the point that they would cease carrying

- EXTRA CREDIT (2 points) Temperature Regulating water all over the world.
- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

50 ~~95~~ 45
YOUR SCORE:
95

STUDENT ID #: A42100583; GROUP #: 7

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

7

- ☐ a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- ☐ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
- ☐ b. Oceans
- ☒ c. Glaciers
- ☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
- ☒ b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A = evaporation, B = deposition, C = sublimation
- ☒ b. A = condensation, B = precipitation, C = evaporation
- ☐ c. A = sublimation, B = precipitation, C = evaporation
- ☐ d. A = precipitation, B = freezing, C = condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- ☐ b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- ☐ d. Water vapor from the pot evaporates

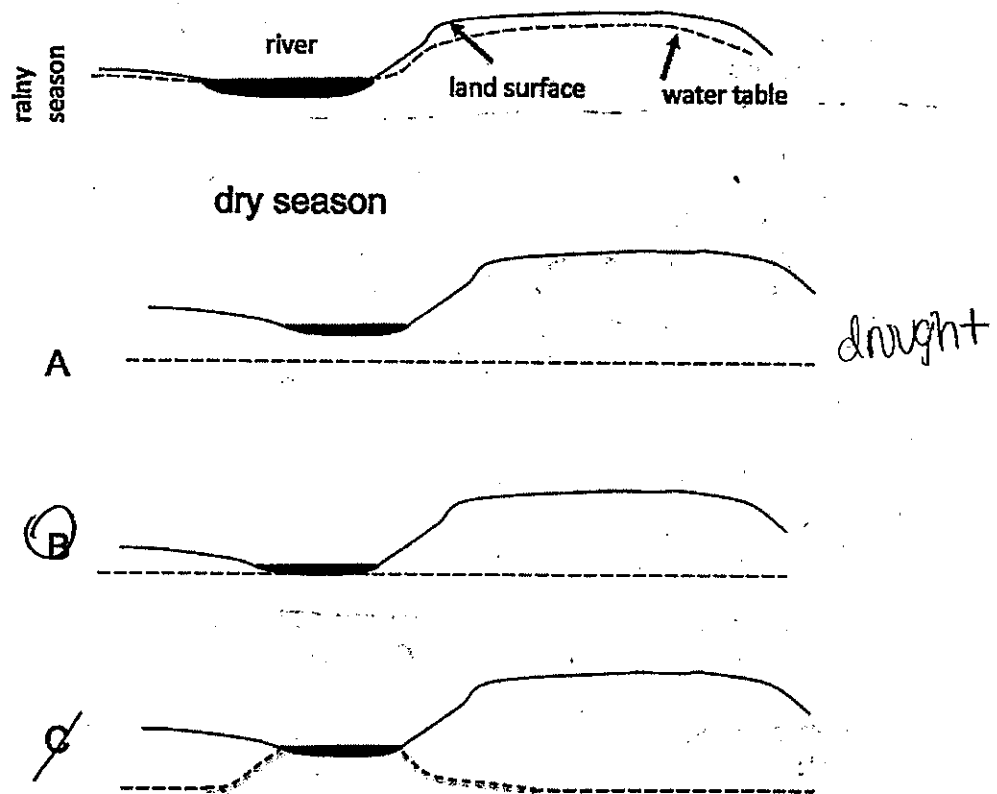
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- ☐ b. This is the opposite of what one would predict with global warming
- ☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- ☒ c. A = gravitational, B = thermal, C = thermal
- ☒ d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



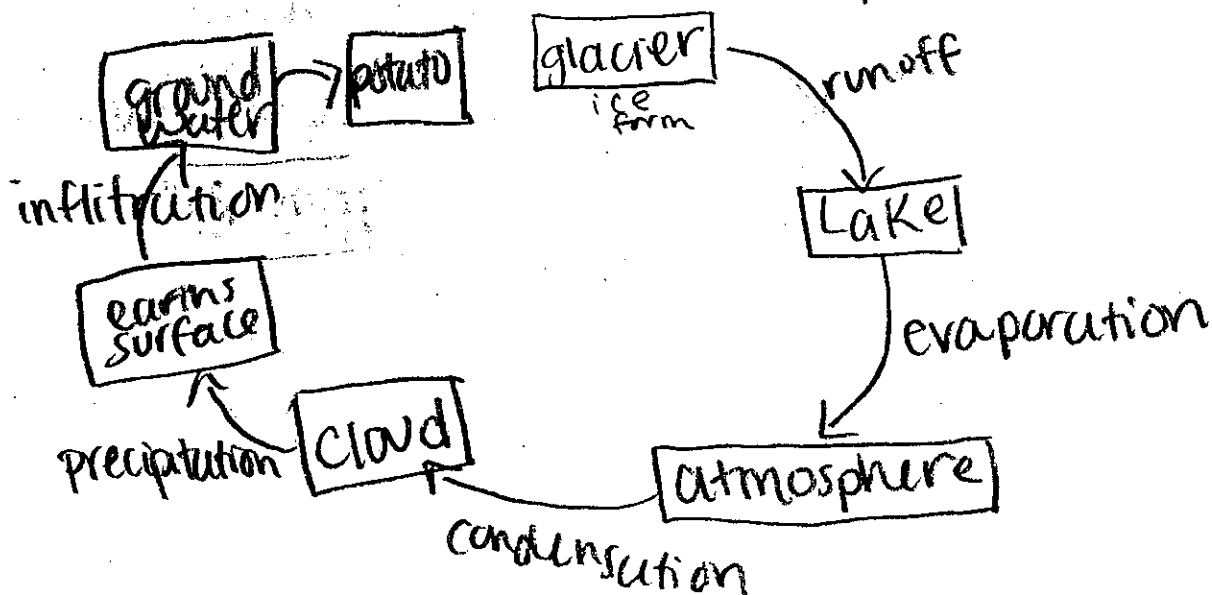
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

A water molecule in a glacier is in solid form, therefore, it will need to melt into the liquid form and then by the process of runoff, the water will be transferred into a nearby lake. After spending some time in the lake, the water molecule heats up at the surface, enough to allow it to evaporate into the atmosphere. Then the water will cool down and condense to be a part of a cloud. After the cloud gets dense enough, the process of precipitation will happen, bringing the water back down to the earth's surface somewhere in a potato farm, where the water seeps in the ground. Then a potato plant uses its roots to suck the water up, and then the water molecule will become a part of the potato.



22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water. ?

if polar ice contained more salt than the surrounding seawater, then thermohaline circulation would change.

explain

The Oceans right now circulate based on density and the amount of salt in the water plays a huge part of the process. Having more salt in the water causes it to be more dense. So when polar ice freezes, it leaves the surrounding water with more salt, causing it to be more dense and then sink down, then the less dense water will rise up to the surface.

If the polar ice were to freeze with having more salt than the surrounding water, the circulation would slow down and eventually stop, because the water on the surface would already be less dense and therefore wouldn't sink down.

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ☒ They both destroy matter during energy conversion
- ☒ They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy.
- ☐ They both convert kinetic energy into potential energy.

35 39

YOUR SCORE:

74

STUDENT ID #: A42326587; GROUP #: 7 ⁷

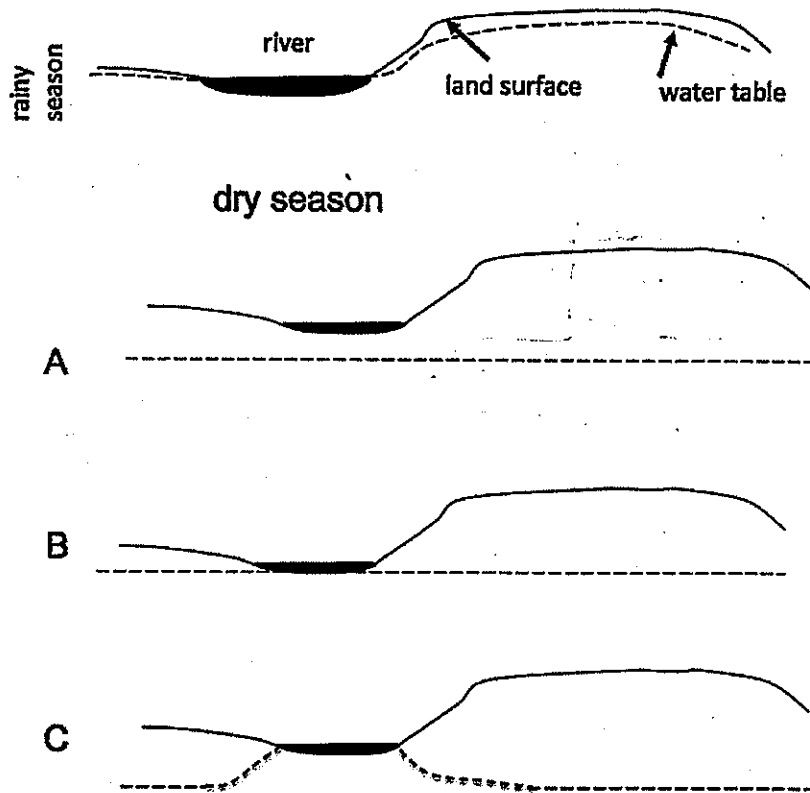
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of cond. A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
- b. been less
- c. remained the same

10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- c. Plants release energy

A 42326687

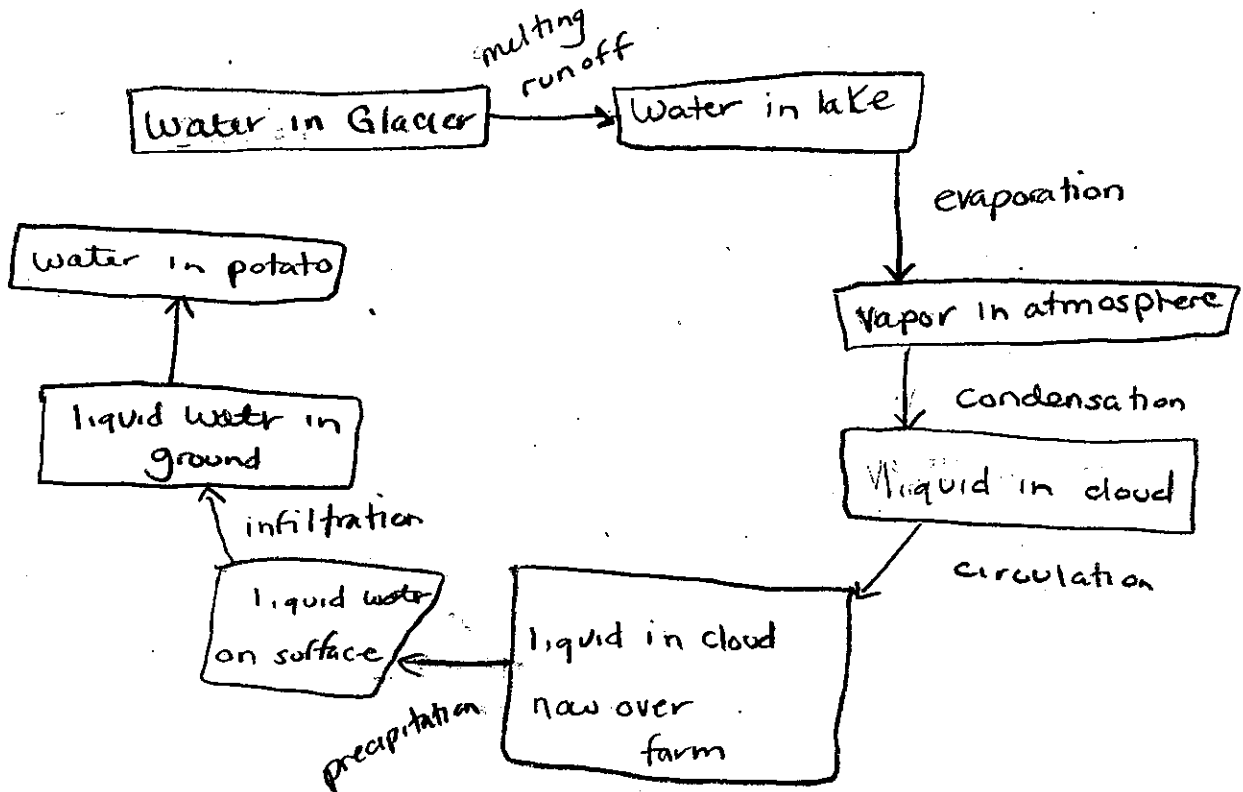
ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- a. Water phase at each step in the journey
 - b. A name for each process that moves or transforms water

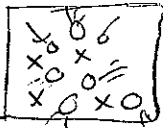
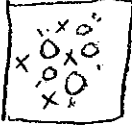


25

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation occurs due to changes of energy. When water goes to ice, the molecules are forming greater bonds and their movement lessens. When there are changes in temperatures, there are changes in mass.?

| | |
|---|---|
| Liquid Water | Polar Ice (regular H ₂ O) |
|  |  |

Because ice contains less salt than seawater it is able to float.

If there was more salt in the ice than the ice would instead sink rather than float due to greater density in the ice.

The thermohaline circulation would alter because instead of thermal energy rises from the bottom of seawater to melt the ice, the ice would be at the bottom and thermal energy would have remained at the surface where ice usually is. This action which is similar to hadley cells would not take place the same anymore.

EXTRA CREDIT (2 points)

✓ EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ✓ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

46 37
YOUR SCORE:
82

STUDENT ID #: A42501575; GROUP #: 7

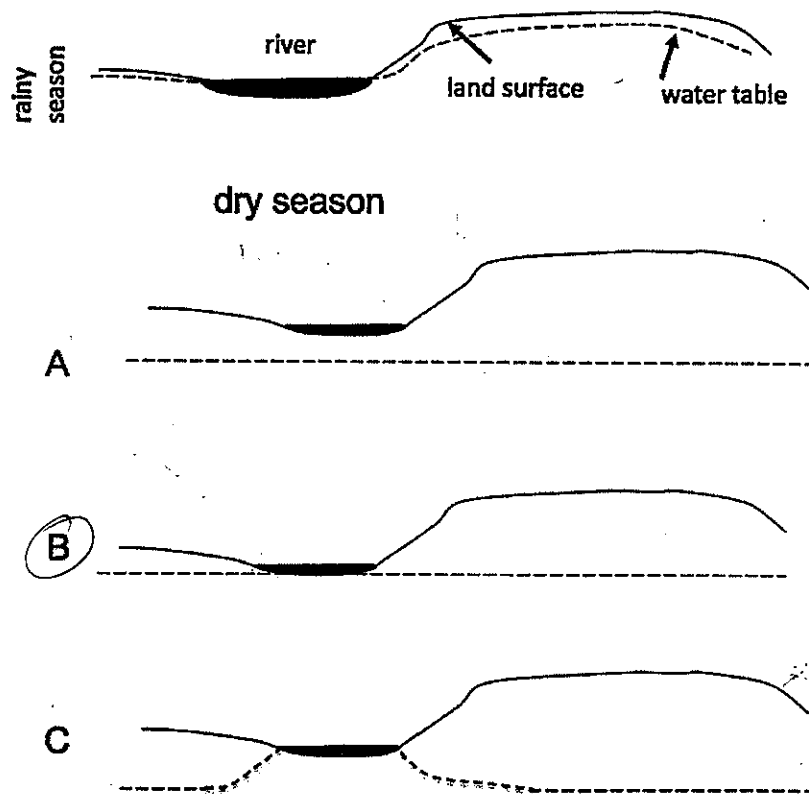
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- Ⓒ A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
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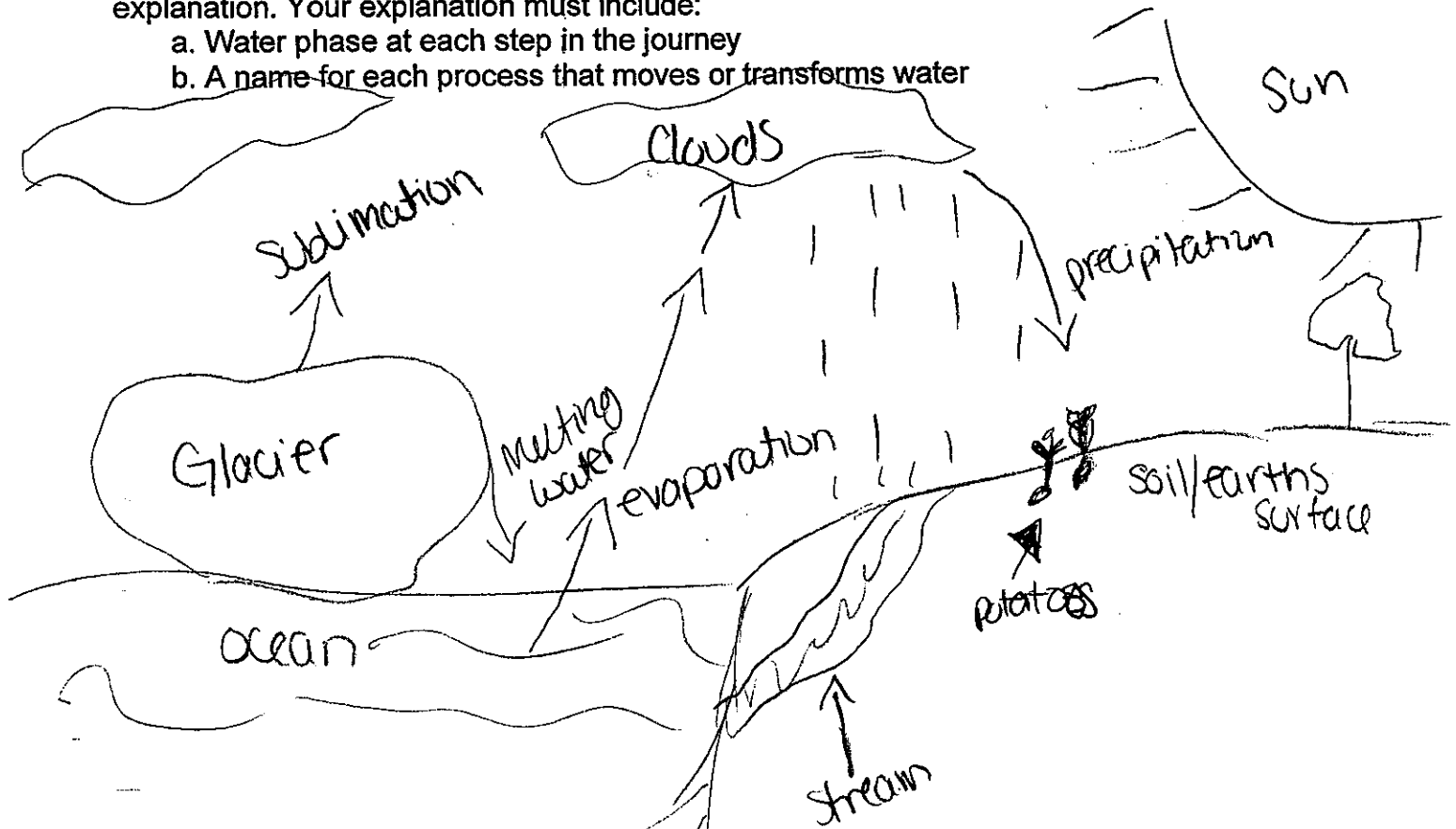
10. What happens when plants respire?

- a. Plants convert biomass into energy
- b. Plants convert energy into biomass
- Ⓒ Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Solid water from a glacier can sublimates (solid to vapor) into the atmosphere, or melt using thermal energy into the ocean. The water from the ocean evaporates into the clouds, which is then followed by precipitation onto the surface and can be runoff, or infiltrate into the soil where the potatoes are growing.

miss
step

20

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because warm-air is moved upward
? the atmosphere creating winds/currents that cause
circulation of warmer water in the ocean, warm water
is in the top layer of the ocean, which when it evaporates
leaves behind the salt content. The
colder, saltier water is denser and
sinks to the bottom. If polar ice
contains more salt than surrounding
seawater, it would be denser and
sink to the bottom. +?

Ocean

8
10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 32

YOUR SCORE:

72

STUDENT ID #: A42135792; GROUP #: 7

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

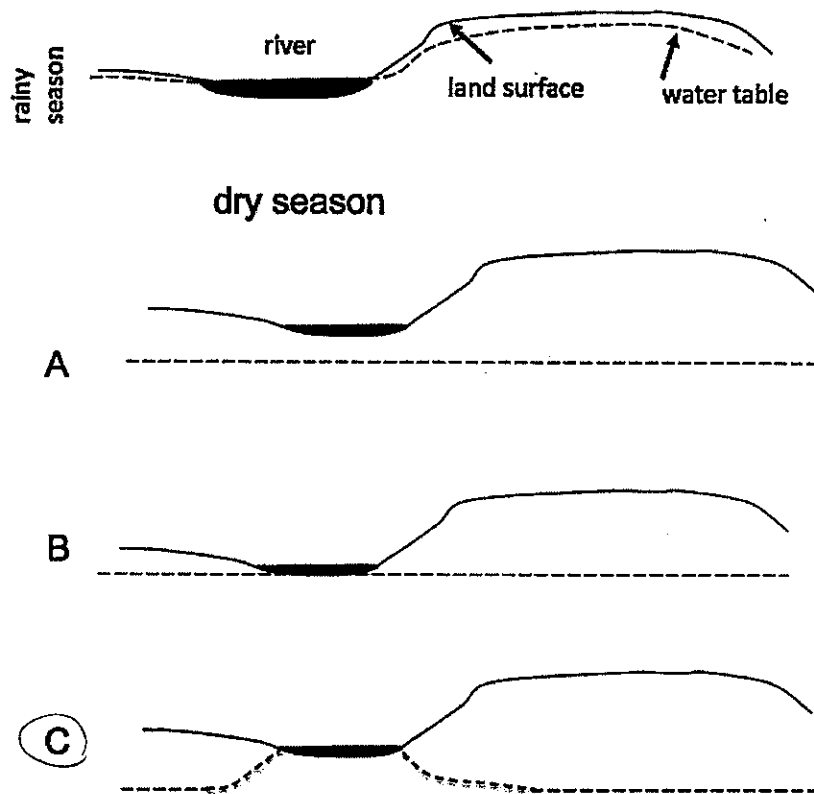
- ✓1. What happens when water molecules condense? 9
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 - The temperature of water molecules decreases
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 - ☒ Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - Ground water from beneath the surface
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- A= evaporation, B= deposition, C= sublimation
 - ☒ A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
- ✓5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- ~~a.~~ Liquid water from the pot condenses
 - ~~b.~~ Liquid water from the pot evaporates
 - ☒ Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
- ✓6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

as temperatures rise there is an increase of RT in the water cycle.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

| | | |
|-----|---|--------|
| ice | | liquid |
| 0.9 | < | 1.0 |
| ? | > | ? |

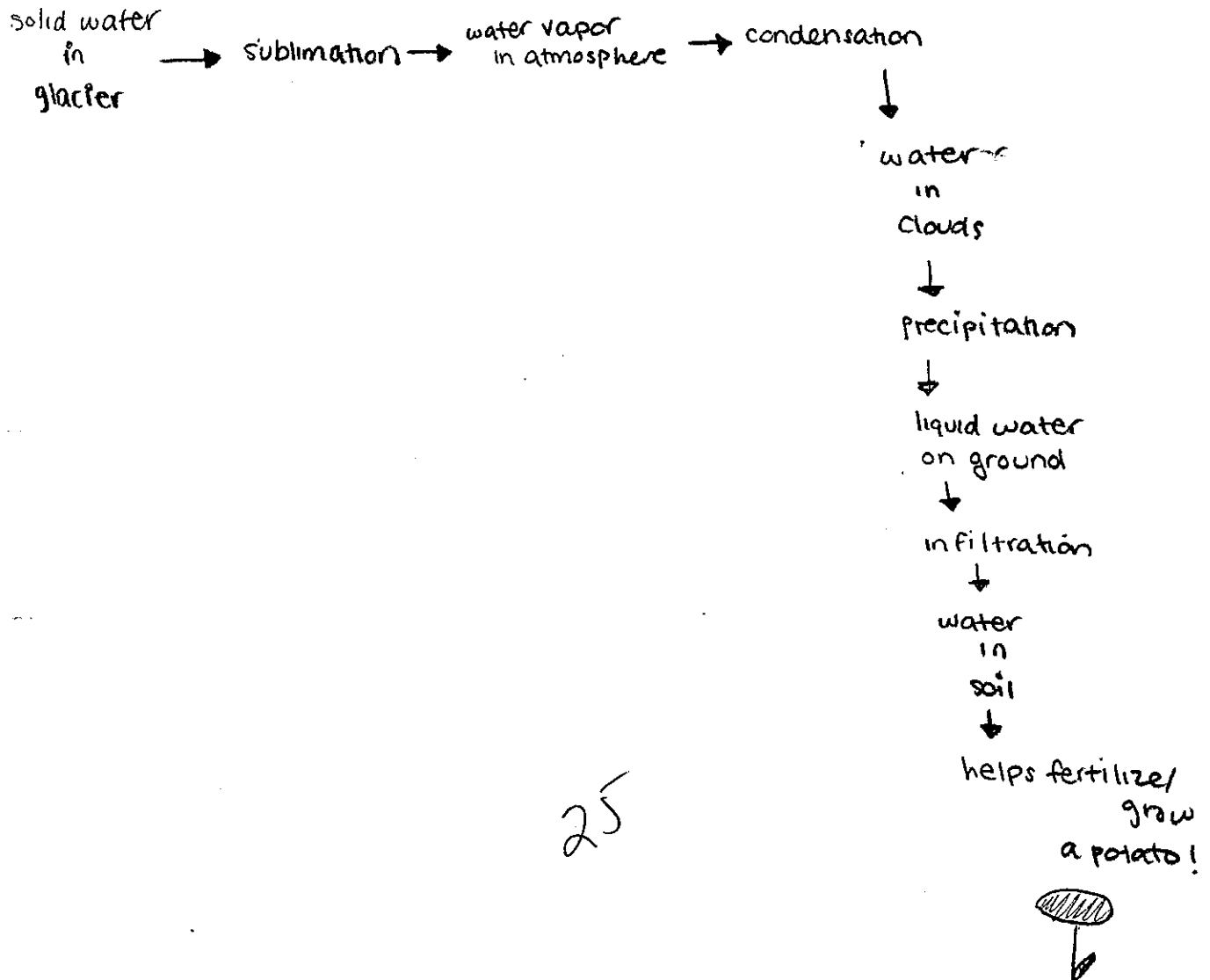
10. What happens when plants respire?
a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A42135792

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

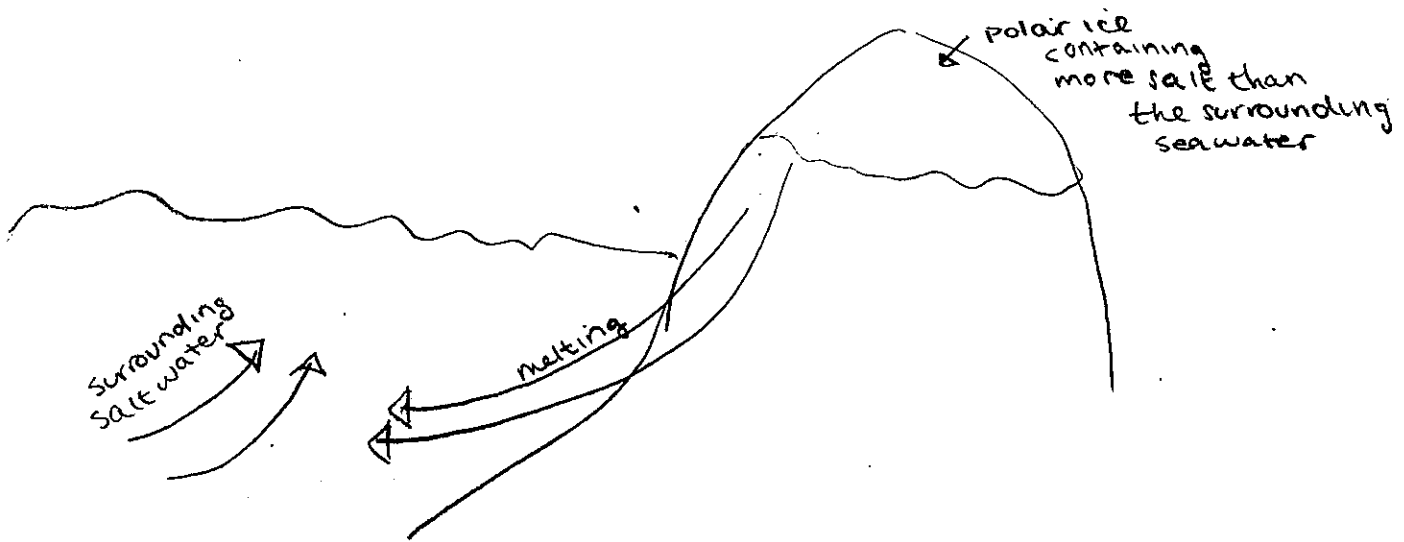
- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.

b. The energy that is causing movement or transformation of water. — ~~gravitational~~
ther mal



25 the seawater from which the polar ice freezes would rise if there was an increase in the amount of salt in the polar ice. This would make colder water rise because it would be less dense than the polar ice containing more salt. The thermohaline circulation in oceans would be less likely to bring warmer waters to the poles and cooler water to the equator. The energy causing movement of water is thermal energy! It melts the ice as it heats because the molecules are heated and also changes the density making the circulation occur. As molecules are heated they become less dense and rise whereas molecules that are cooled become more dense and fall.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

45 52

YOUR SCORE:

97

STUDENT ID #: A42311768; GROUP #: 8

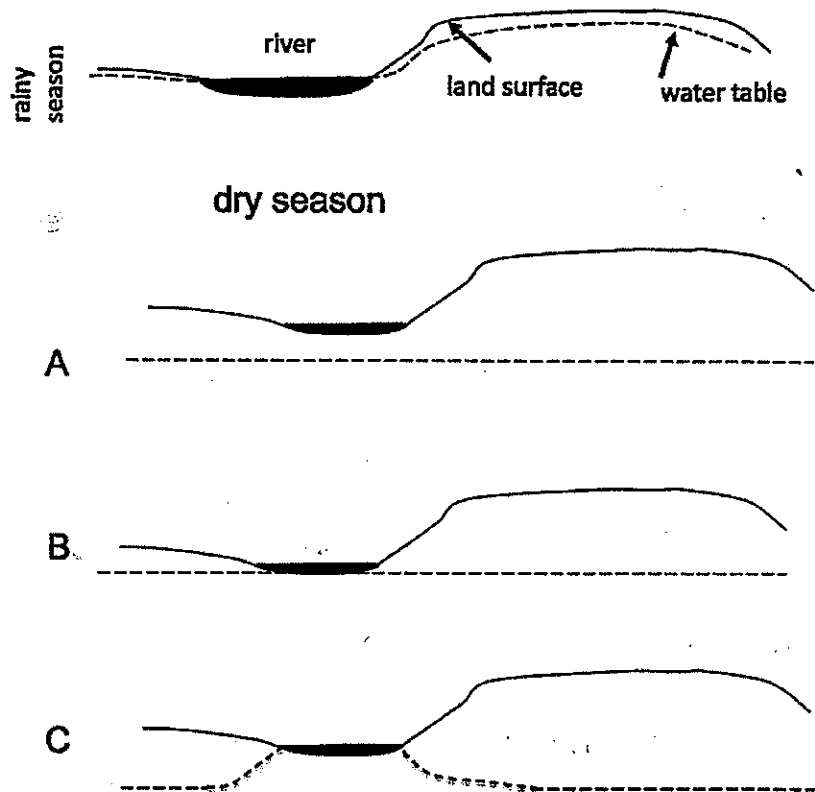
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 7
- Water molecules become larger
 - Gaseous water becomes liquid water
 - Hydrogen and oxygen atoms combine to form liquid water
 - The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- The atmosphere
 - Oceans
 - Glaciers
 - Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- Rainfall and surface runoff into the lake
 - Seasonal high water from the Mississippi River
 - Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- A= evaporation, B= deposition, C= sublimation
 - A = condensation, B= precipitation, C= evaporation
 - A= sublimation, B= precipitation, C= evaporation
 - A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- Liquid water from the pot condenses
 - Liquid water from the pot evaporates
 - Water vapor from the pot condenses
 - Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- This is what one would predict with global warming
 - This is the opposite of what one would predict with global warming
 - Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water

The water from the glacier would melt causing it to become a part of the water reservoir. The water would then be evaporated from the reservoir and become a part of the clouds and within the clouds, tiny droplets of water would condense and then precipitation would occur and the water would be absorbed by the soil and be what is considered ground water. Then as the potato plant grows, it grows with the water need from the soil which started as the glacier.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

The circulation would change because as mentioned in the question the polar ice contained more

salt than the surrounding sea water. With excess amounts of salt in the water it would cause the movement of water to decrease because the water would be more dense.

5 Gravitational energy would cause this to happen because with increase density it also causes decreased movement. The polar ice would also freeze faster due to high salt levels.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

35 22

YOUR SCORE:

57

STUDENT ID #: 438000027; GROUP #: 8

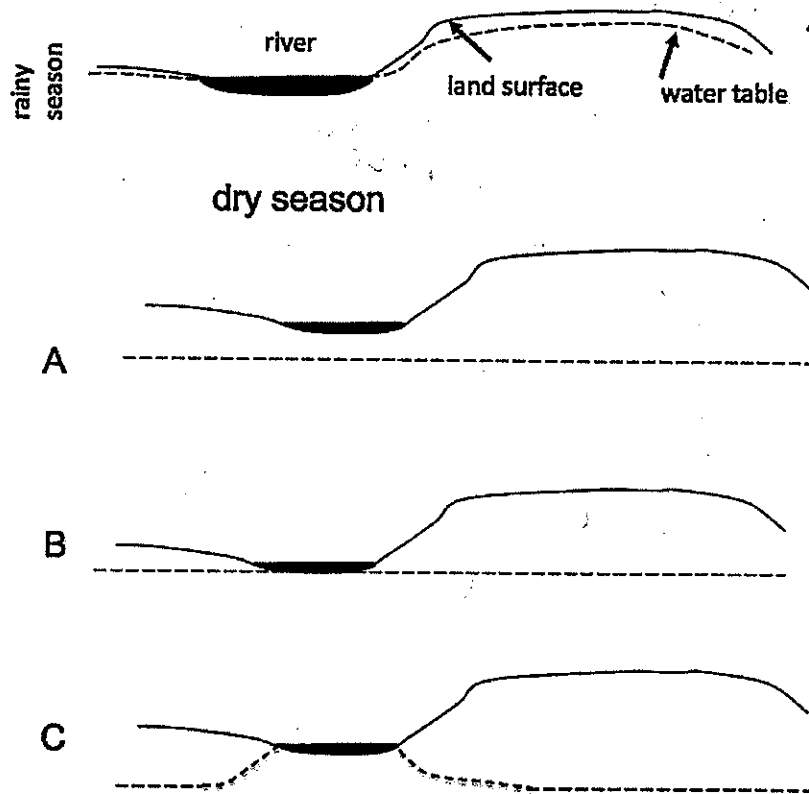
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
- a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
- a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
- ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
- a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - ☒ c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
- a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - ☒ c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
- ☒ a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



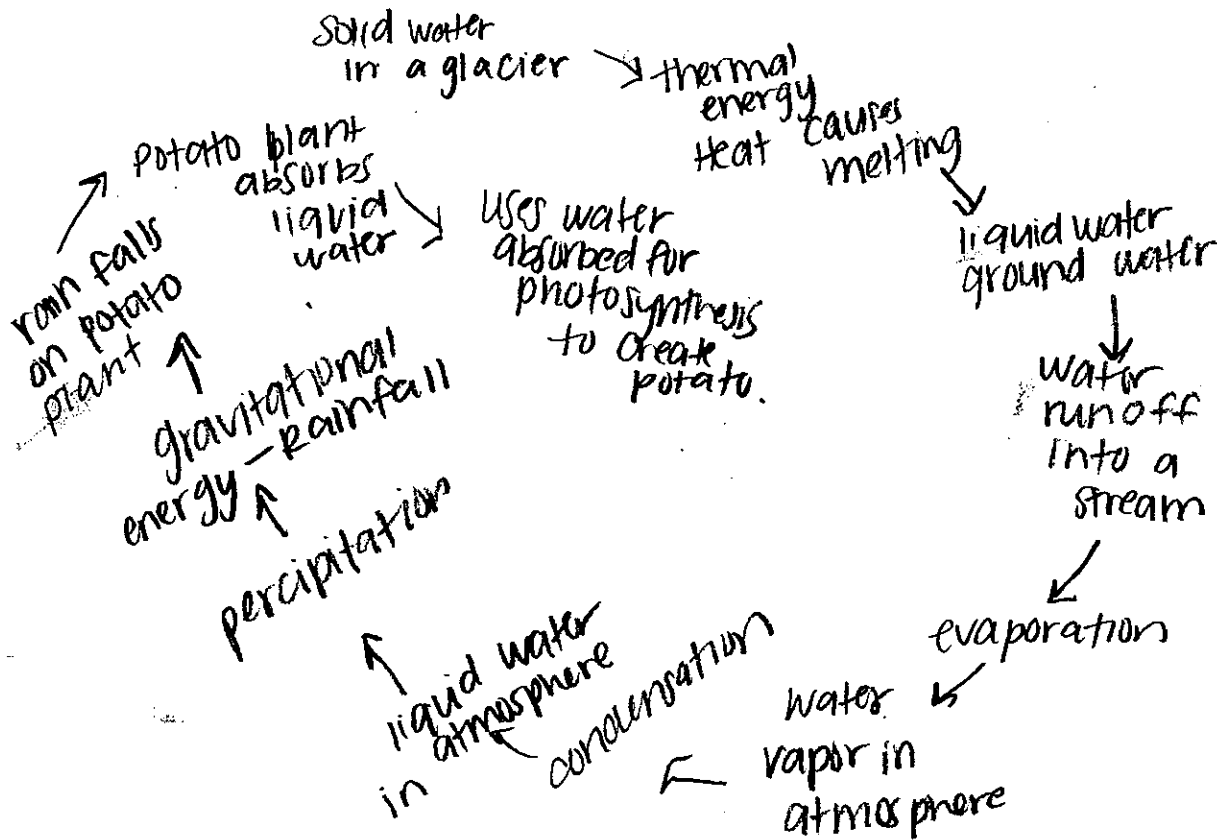
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
- ice density .9
water density 1.0
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43866027

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

If more salt was in the ice than in the surrounding water it is very likely that the ice caps would have even more density since salt water is more dense because of all the dissolved particles in it. The more particles the more ~~the~~ dense it is. So then it would sink. The bottom of the ocean is cooler than the top of the ocean water (Heat rises as as it cools it falls down) so the circulation within the water mixes the particles and dissolved ions – around in the water. This is thermal energy that causes the warming and cooling but gravitational energy causes the circulation because the more dense, cooler water is weighed down more than the less dense warmer water, until that warmer water cools down? and is brought to the bottom by gravitational energy too.

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A40833474; GROUP #: 8

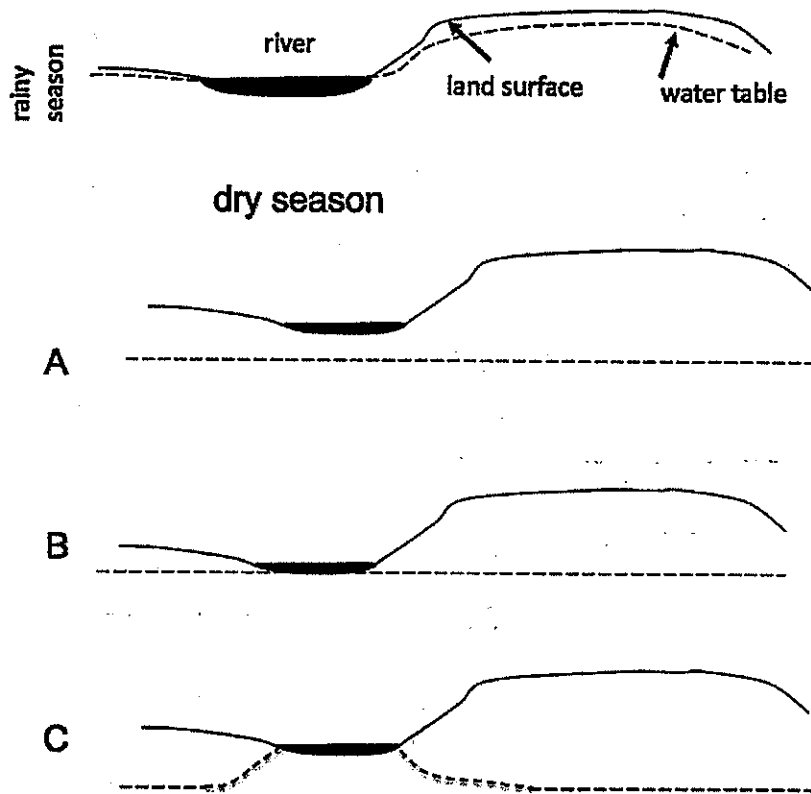
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy. CC

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



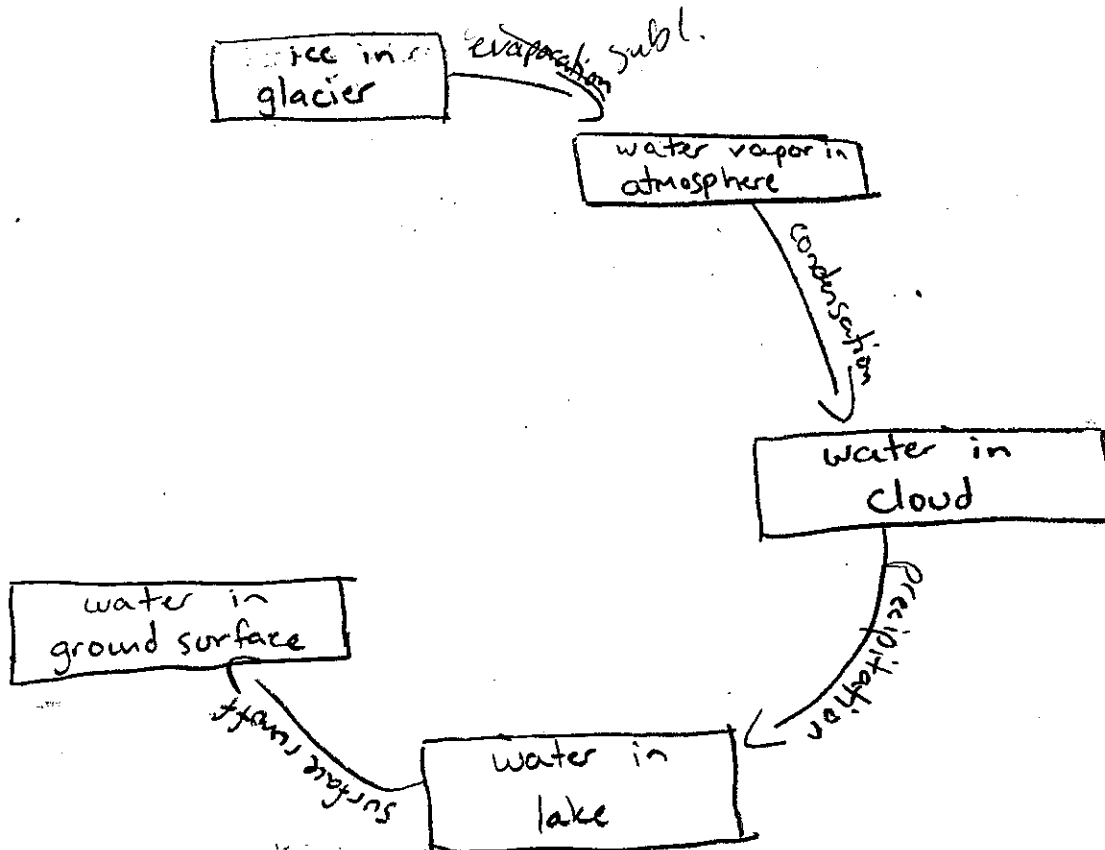
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A40833474

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Once the water is in the ground, it then saturates the potato, and completes the cycle from glacier to potato.

- The process of thermohaline circulation exists because salt water is more dense than regular water, and the saltier water sinks, while the fresh water rises. If polar ice actually contained more salt than the surrounding seawater, thermohaline circulation would cease to exist because buoyancy would cause the ice to sink because it would be denser, and the remaining water would be less salty and stay near the surface. Thermohaline circulation would no longer provide heat to the polar regions because the cold water would never circulate out, and the warm equatorial water would not be able to circulate in. ~~20~~ 20

a. They both destroy matter during energy conversion
b. They both convert thermal energy into gravitational energy
c. They both convert chemical energy into thermal energy
d. They both convert kinetic energy into potential energy.

YOUR SCORE:

75

STUDENT ID #: A39223581; GROUP #: 8

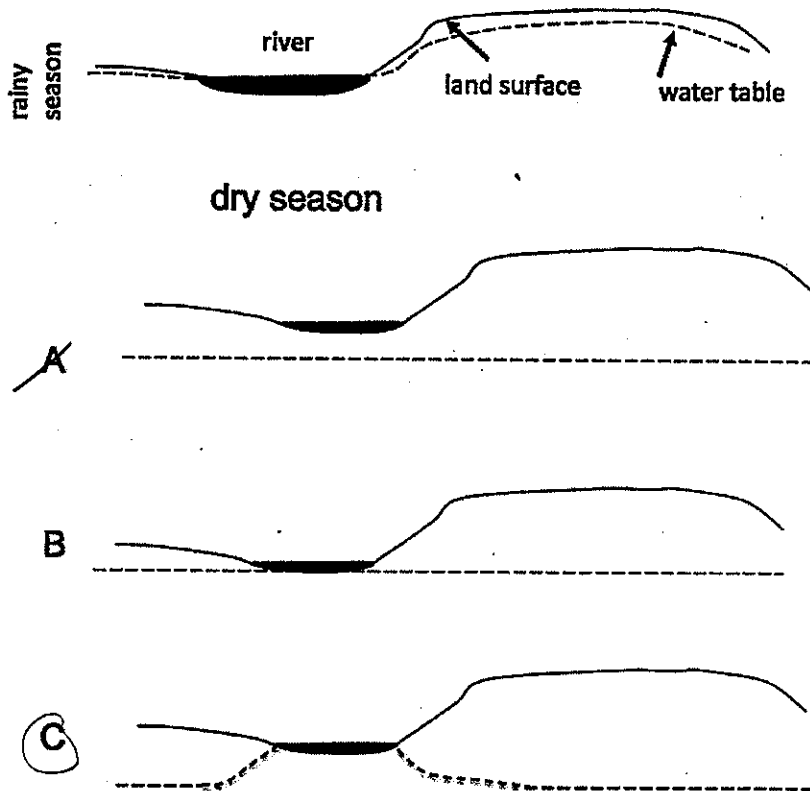
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
 - ☐ a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - ☐ c. Hydrogen and oxygen atoms combine to form liquid water
 - ☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - ☐ b. Oceans
 - ☐ c. Glaciers
 - ☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☐ a. Rainfall and surface runoff into the lake
 - ☒ b. Seasonal high water from the Mississippi River
 - ☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ☐ a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - ☐ c. A= sublimation, B= precipitation, C= evaporation
 - ☐ d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - ☐ a. Liquid water from the pot condenses
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 - ☒ c. Water vapor from the pot condenses
 - ☐ d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
 - ☐ b. This is the opposite of what one would predict with global warming
 - ☐ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A =gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
b. been less
c. remained the same

Water = more dense

10. What happens when plants respire?

- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

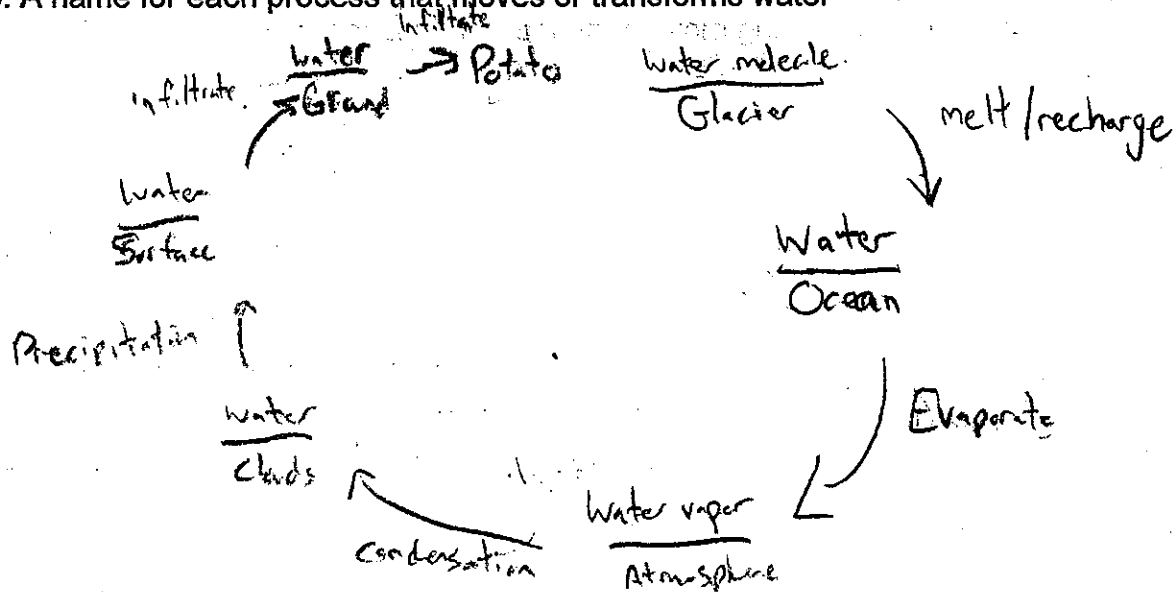
CO₂ → O₂

A3922 3581

SHORT ANSWER. 25 points each (50 points total)

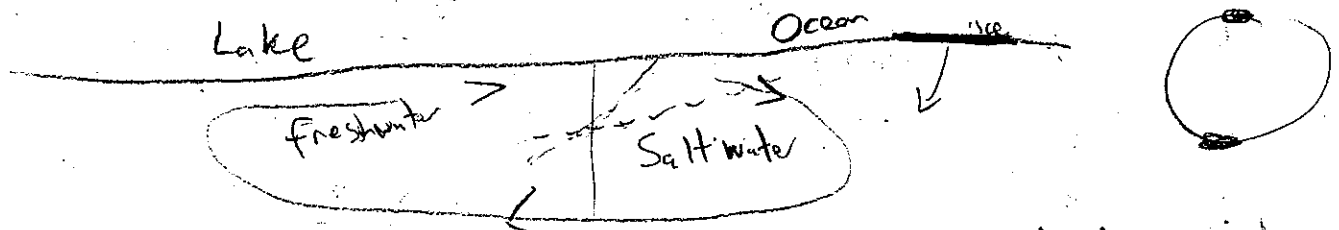
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.



The thermohaline circulation occurs because saltwater, which is more dense than freshwater, flows underneath freshwater and then cycles as warm water heats up and rises back to the surface when less dense than colder water. This is caused by chemical potential energy being transformed to thermal energy. The thermohaline cycle would change by the ice not staying afloat in the water. Since it would be more dense, and the polar ice would shrink, leading to an influx of seawater.

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 30

YOUR SCORE:

75

STUDENT ID #: A43425519; GROUP #: 30

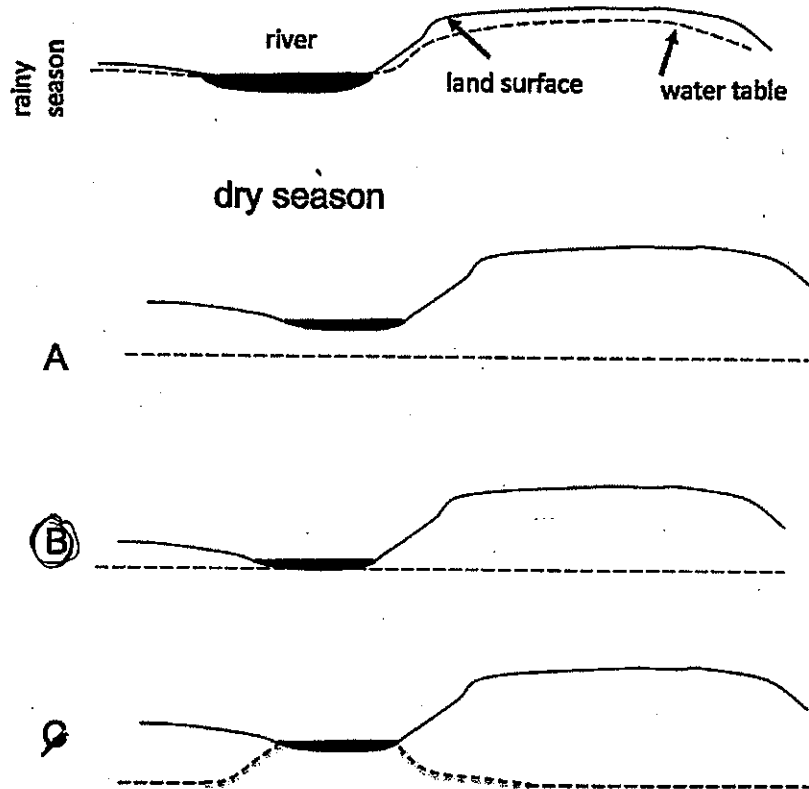
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☐ a. The atmosphere
☐ b. Oceans
☒ c. Glaciers
☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from? 011
☒ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
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☒ b. A= gravitational, B= gravitational, C= thermal
☒ c. A= gravitational, B= thermal, C= thermal
~~d.~~ A= thermal, B= thermal, C= thermal

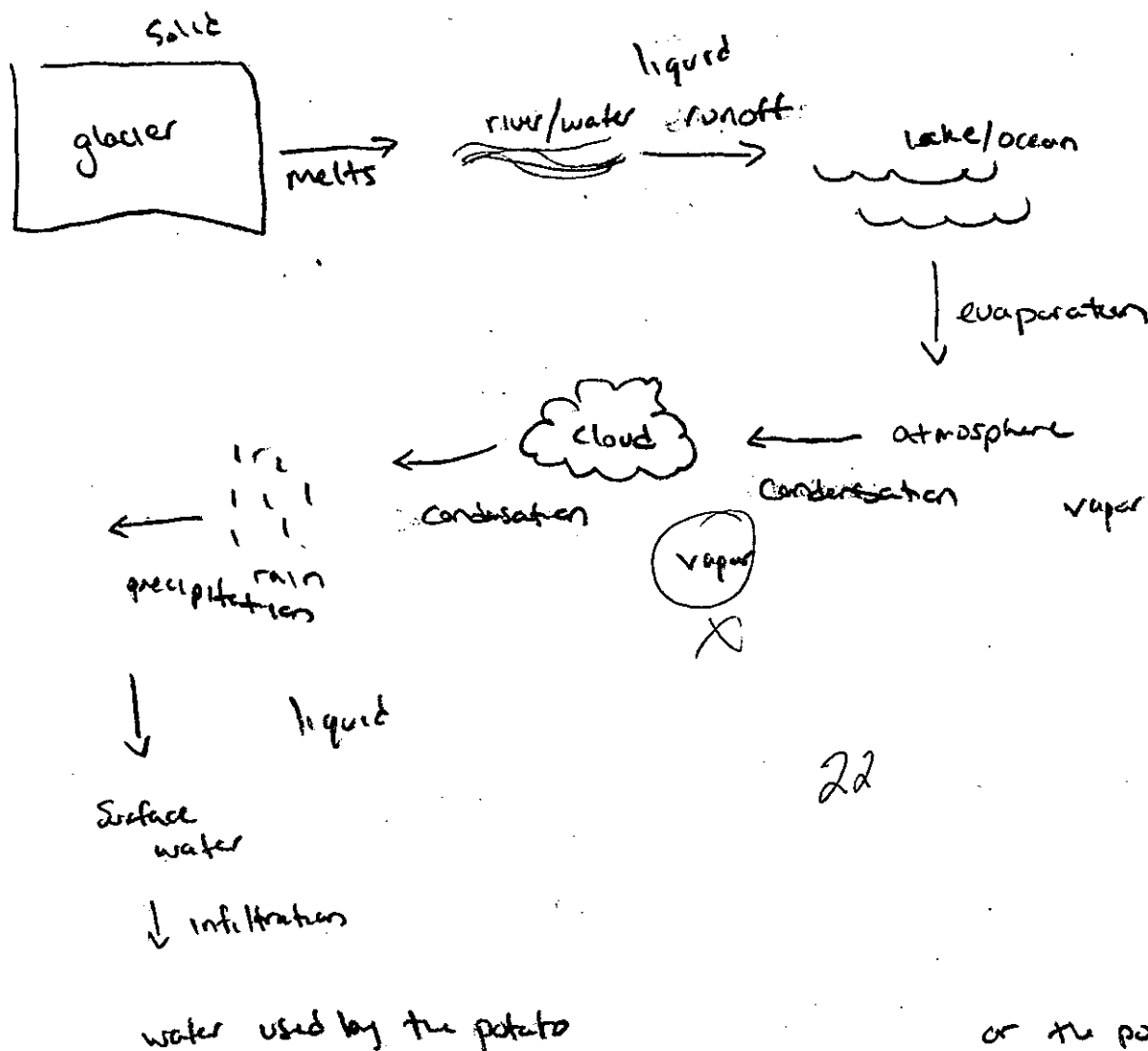
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ~~a.~~ been greater
☒ b. been less
~~c.~~ remained the same
10. What happens when plants respire?
- ~~a.~~ Plants convert biomass into energy
☒ b. Plants convert energy into biomass
☒ c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



The glacier melts causing a river. The river runoff goes into a lake or ocean, which then evaporates into the atmosphere. Then the vapor condenses to form clouds, which then condenses to form tiny water droplets. Then it precipitates causing rain, which then hits the surface causing surface water. Then that water infiltrates into the ground. that water can be pumped and used for the potato

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

When the seawater evaporates it leaves the salt behind causing the salt count in the ocean to be greater. If the polar ice contained more salt, there would be less salt in the ocean. Therefore, the salt would become more dense? than the water causing the ice to sink beneath the seawater. gravitational energy is pulling down on the more dense ice caps, 10

The thermohaline process would be thrown off because the change in the water density would cause the water to be warmer throwing off the current path it is on now.

The gravitational energy is playing the biggest role by pulling down the more dense ice caps.

It is more dense with the ions in the ice, than the more pure water.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

30 34

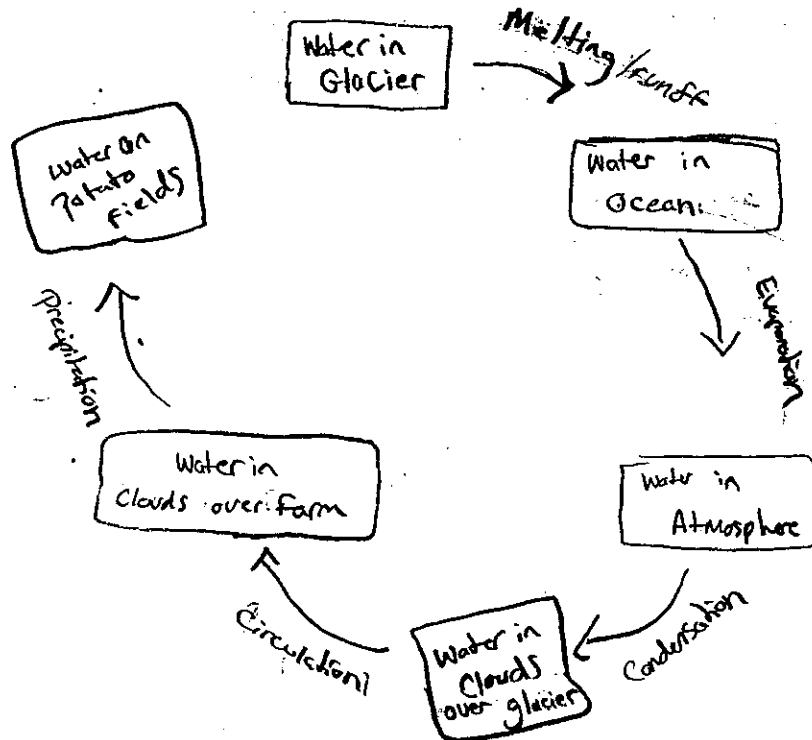
YOUR SCORE:

64

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



- The water originally in the glacier would melt/runoff into a large ocean of water. Then, the water would evaporate into the atmosphere, and condense into the clouds. After circulation, the clouds will now be over a potato farm. Once precipitation occurs, rain water will land on the potato field and water the plants.

A43425519

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Thermohaline circulation would change because of the density of objects. Circulation occurs because the warm and cold molecules in the ocean water are constantly moving and circulating through the ocean. Warm water molecules are less dense. If a polar ice contained more salt than the surrounding water, it would most likely sink the ice cap. The cap would be less dense than the water and not be able to stay afloat. The more salt in ice, the less dense it would be. This could cause circulation to change because thermal energy changes would cause change in temperature of the water. how?

5

EXTRA CREDIT (2 points)

- 2 EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

35 30

YOUR SCORE:

65

STUDENT ID #: A41650757; GROUP #: 9

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
☒ a. Water molecules become larger
☐ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
☒ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
☐ a. Rainfall and surface runoff into the lake
☒ b. Seasonal high water from the Mississippi River
☐ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
☒ b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

A41650757

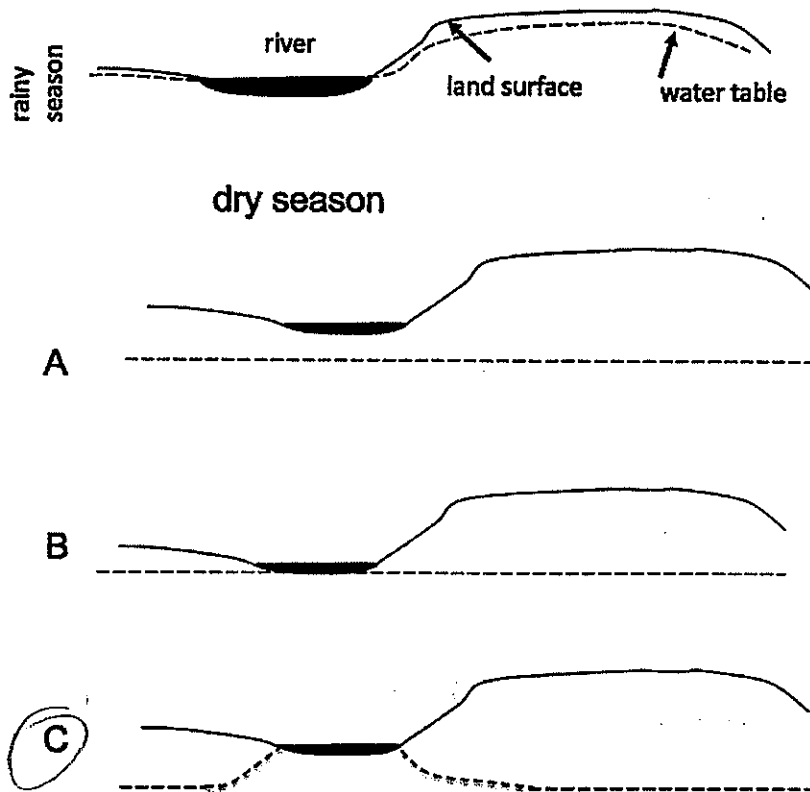
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

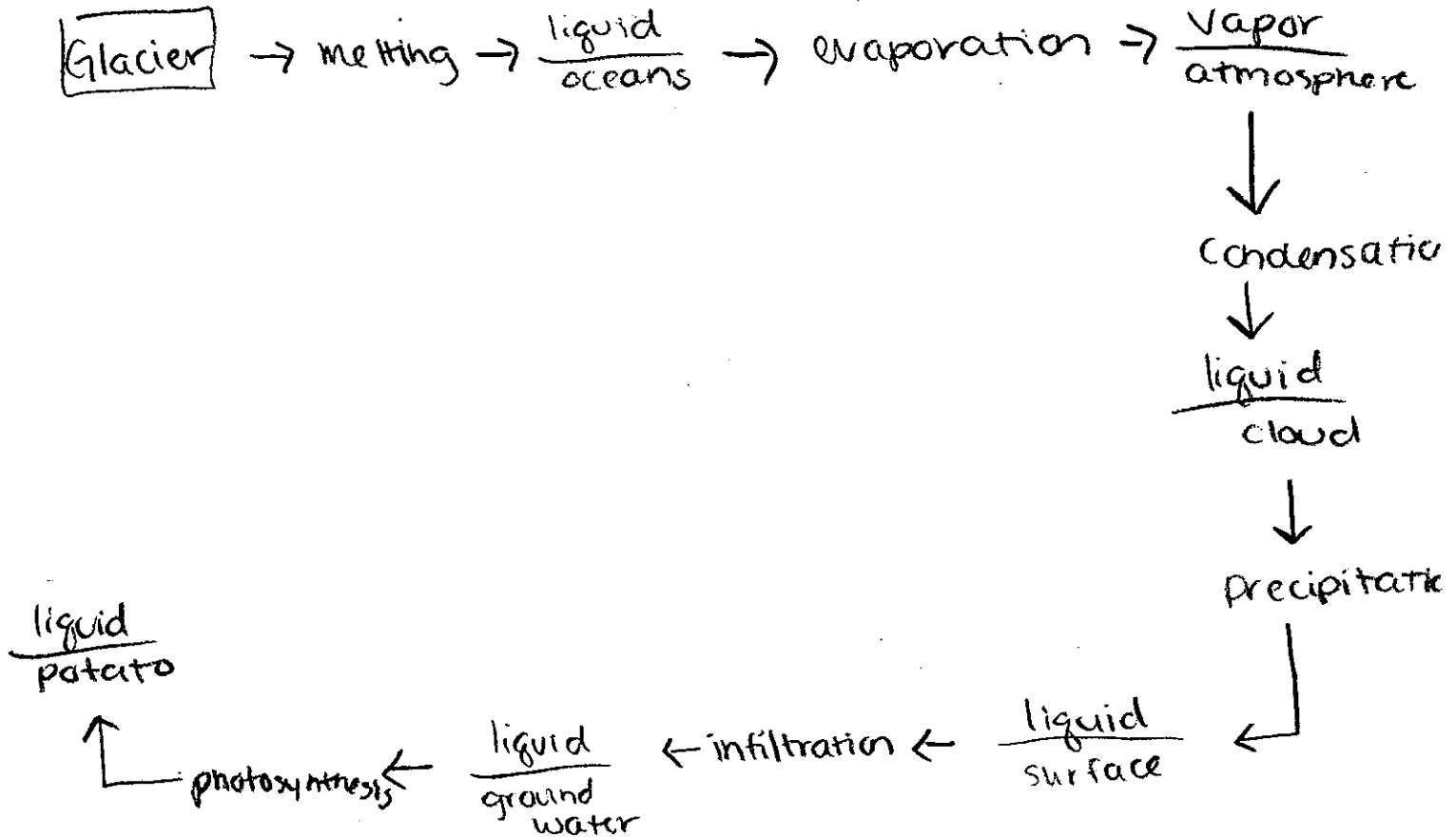


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A41650757

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



25

Salt H₂O sinks

A41650757

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

10 The density of the water is affected by its salinity and causes the water to sink or rise. Salt water sinks because of its density. Warm water is circulated throughout regions of the world. If the polar ice had more salt than the surrounding water then evaporation from the glaciers would increase the salt going into the atmosphere which would slow the the circulation because temperatures would change in polar regions slowing the processes that drive circulation.

The sea level would rise making the temperatures different in certain regions because take longer to heat.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ~~a. They both destroy matter during energy conversion~~
- ~~b. They both convert thermal energy into gravitational energy~~
- ☒ c. They both convert chemical energy into thermal energy
- ~~d. They both convert kinetic energy into potential energy.~~

30 37

YOUR SCORE:

67

A40680269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A40680269; GROUP #: 9

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
a. ~~Water molecules become larger~~
b. ☒ Gaseous water becomes liquid water
c. ~~Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
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b. Oceans
c. ☒ Glaciers
d. Lakes and streams
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c. ☒ Water vapor from the pot condenses
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A40680269

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

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a. A= chemical, B= thermal, C= thermal

b. A = gravit

c. A = gravit

d. A= therm

8. The drawing represents _____ through the _____ the dashed _____ represent _____ table. If the _____ represents _____ during the _____ which figure _____ represent _____ region during _____ season?

9. We can know the density would be _____
a. beer
b. beer
c. rem

10. What _____
a. Plai
b. Plai
c. Plai

sed to
vel

A40680269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

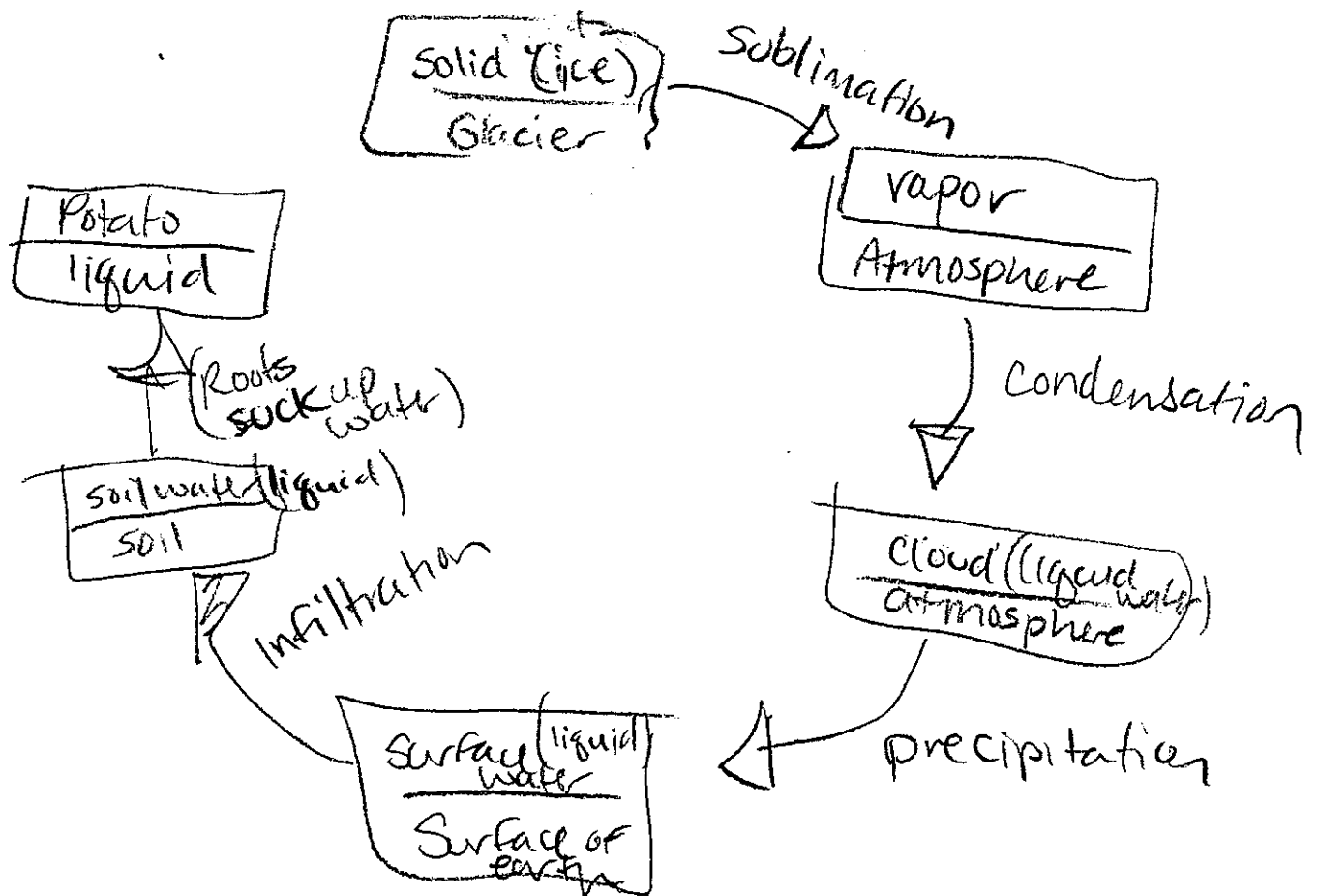
3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

This is how a water molecule could move from a glacier to become part of a potato



25

A46680267

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

20

Thermohaline circulation happens because salt water is more dense than fresh water and because warm water is less dense than cold water. So, saltier water sinks as less saltier water rises & warm water rises as colder water sinks. Water near the equator is warmer than water near the poles therefore more rises and then spreads out or circulates toward the poles & water at the poles is colder & the warm water there eventually cools & sinks. So it is like a circle, warm water rises, cools as it gets farther from the equator, sinks, and moves back toward the equator where it rises again. If polar ice contained more salt than surrounding sea water it would be more dense than normal ice, therefore it would float less than normal ice (possibly sink depending on density of polar ice vs. seawater) causing seawater to possibly rise above saltier polar ice. This would effect the thermohaline circulation cycle by causing the water near the poles to sink & rise different

EXTRA CREDIT (2 points)

2 EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

explain

45 47

YOUR SCORE:

92

STUDENT ID #: A46366040; GROUP #: 10

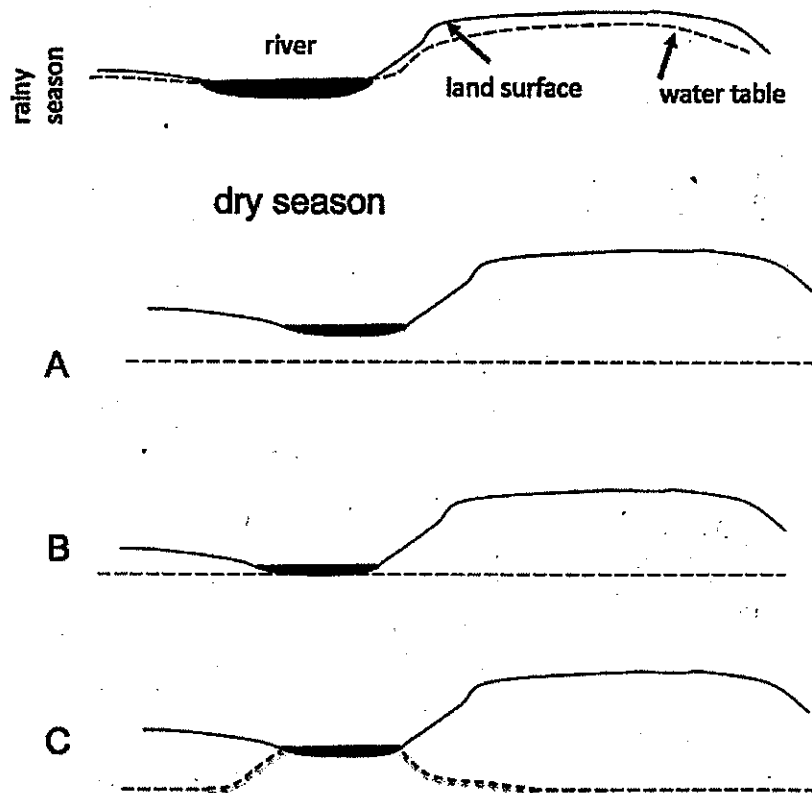
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
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 - c. Glaciers
 - d. Lakes and streams
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 - c. Ground water from beneath the surface
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 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



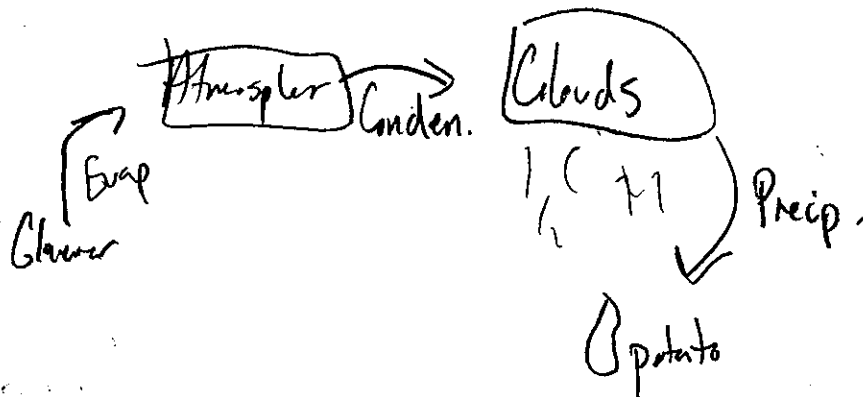
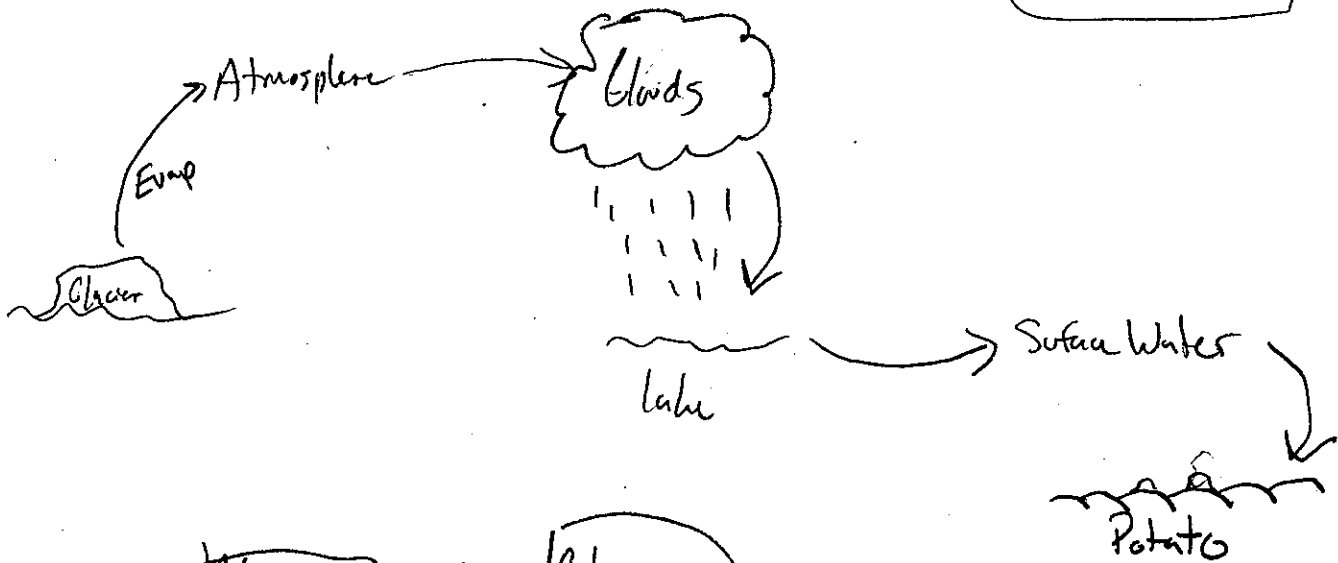
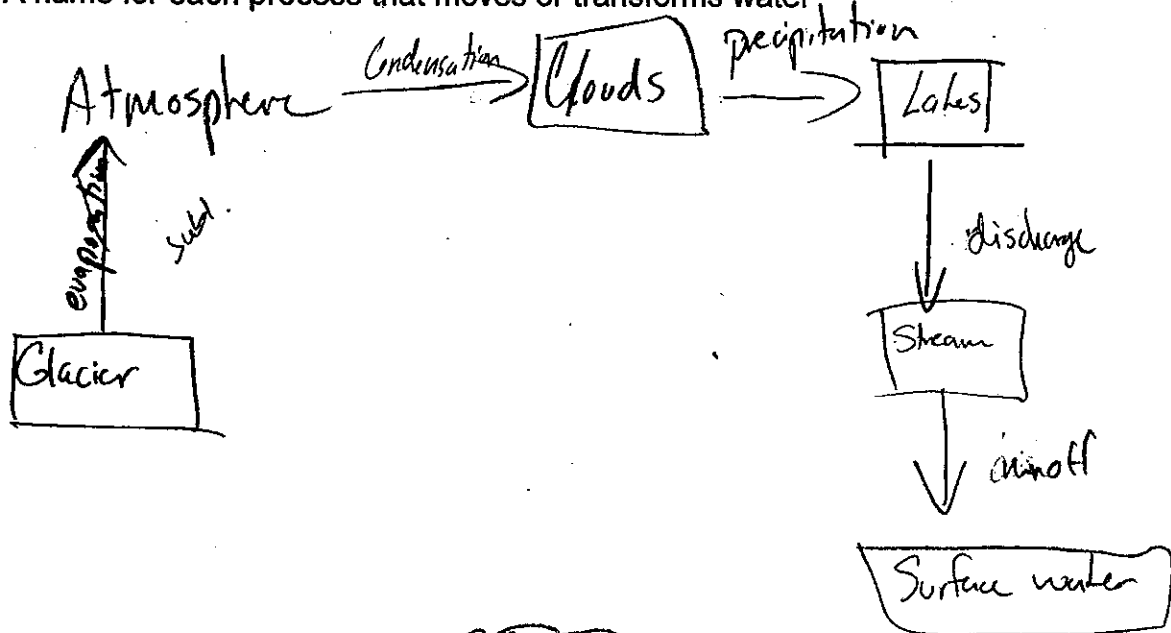
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A40366040

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A40366040

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because of the current that allows the ocean water to flow in a certain way. This is determined by the ocean currents and air flow. With the colder, denser water on the bottom the warmer water is carried throughout. The air flow also helps determine the pace at which the current is moving. Thermal energy in both the water and air help control the currents since the higher the temperature of the water the more spread out the molecules are. With the introduction of salt, the water will be more dense and affect the thermal energy. If the ice had more salt we might also see an affect on residence time in the ice since there will be less water to be released, which may affect the amount of water being circulated. The

10

EXPLAIN

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

40 27

YOUR SCORE:

67

STUDENT ID #: A39916396; GROUP #: 10

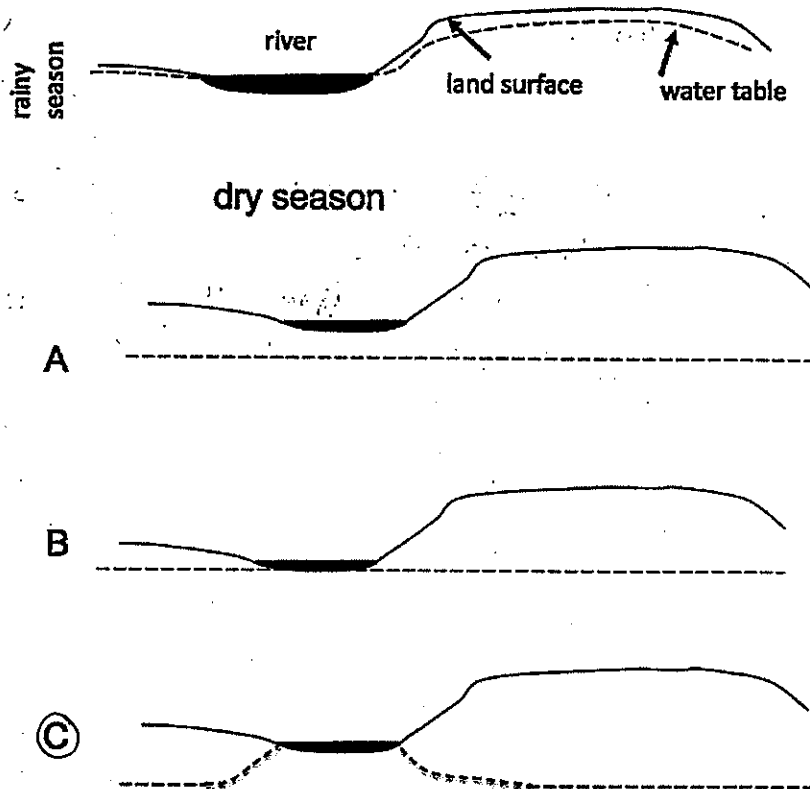
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
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d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
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5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- Ⓒ A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

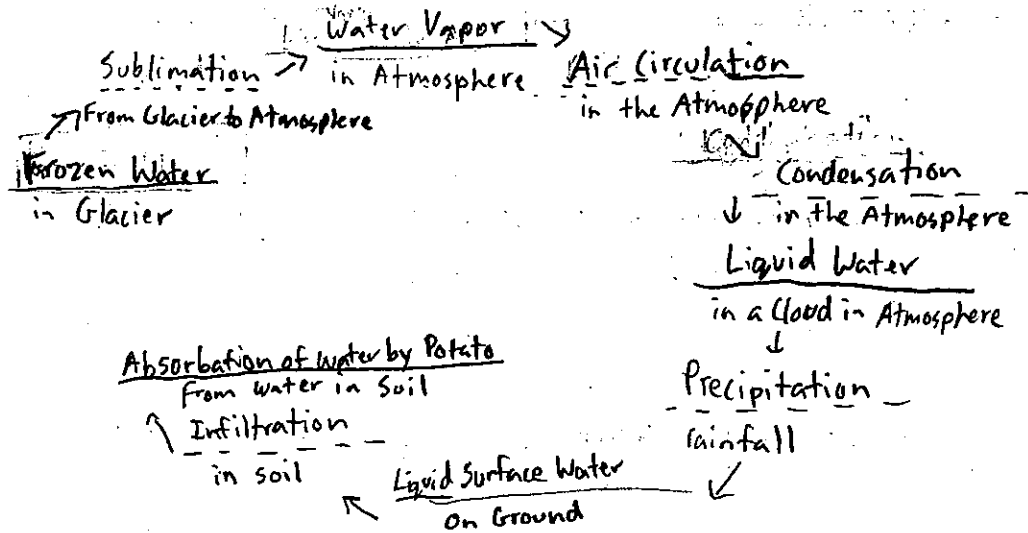


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - Ⓒ remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - Ⓒ Plants release energy

A3991639C

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
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25

A39916396

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Circulation is the rising of

Warmer and fresher water is less dense than cooler and saltier water. Circulation is the process by which less dense molecules rise and more dense molecules fall. Thermohaline circulation is the process of denser colder saltier water sinking to the deeper parts of the ocean and warmer fresher water rising, it is summed up in buoyancy. If polar ice contained more salt than the surrounding sea water, the melting ice would severely disrupt or even stop thermohaline circulation. Because, most of the freshwater involved in the cycle comes from the melting polar caps. To disrupt this balance and take away the influx of fresh less dense water would destroy the circulation.

not so much in oceans

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- © They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

50 37

YOUR SCORE:

88 87

STUDENT ID #: A42108428; GROUP #: 10

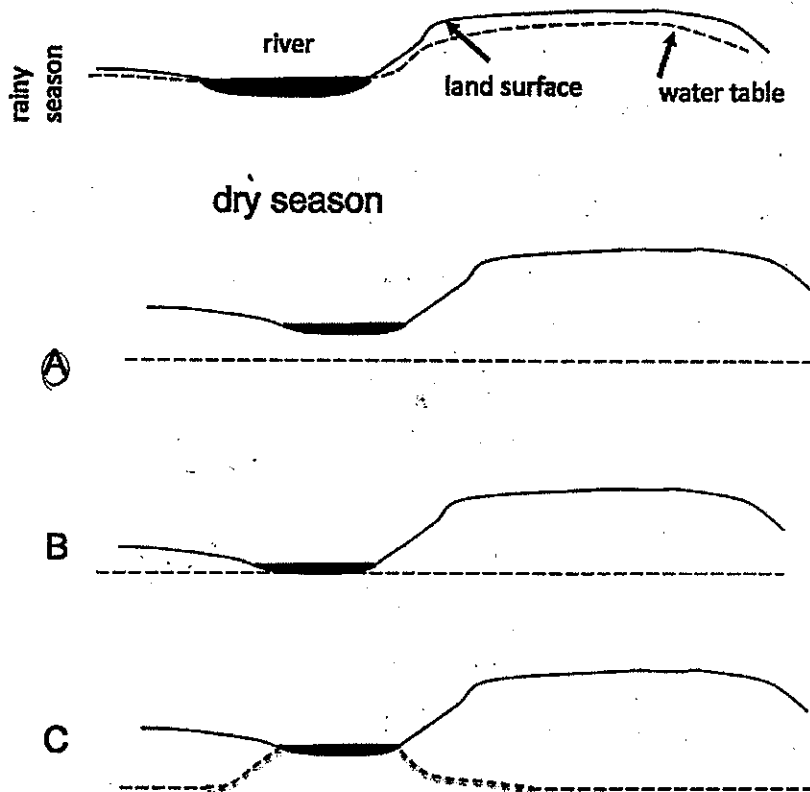
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 7
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9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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A 42108428

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

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Thermohaline circulation would change because of the density of objects. Circulation occurs because the warm and cold molecules in the ocean water are constantly moving and circulating through the ocean. Warm water molecules are less dense. If a polar ice contained more salt than the surrounding water, it would most likely sink the ice cap. The cap would be less dense than the water and not be able to stay afloat. The more salt in ice, the less dense it would be. This could cause circulation to change because thermal energy change would cause change in temperature of the water.
how?

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

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35 3
YOUR SCORE
65

~~XXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A42154647 ; **GROUP #:** 11

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

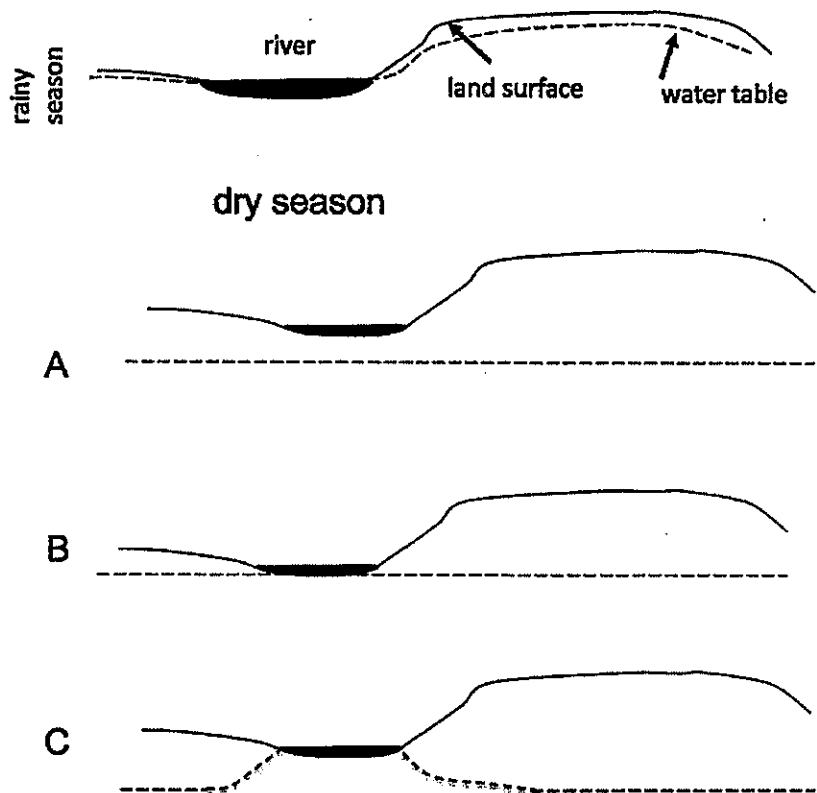
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- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

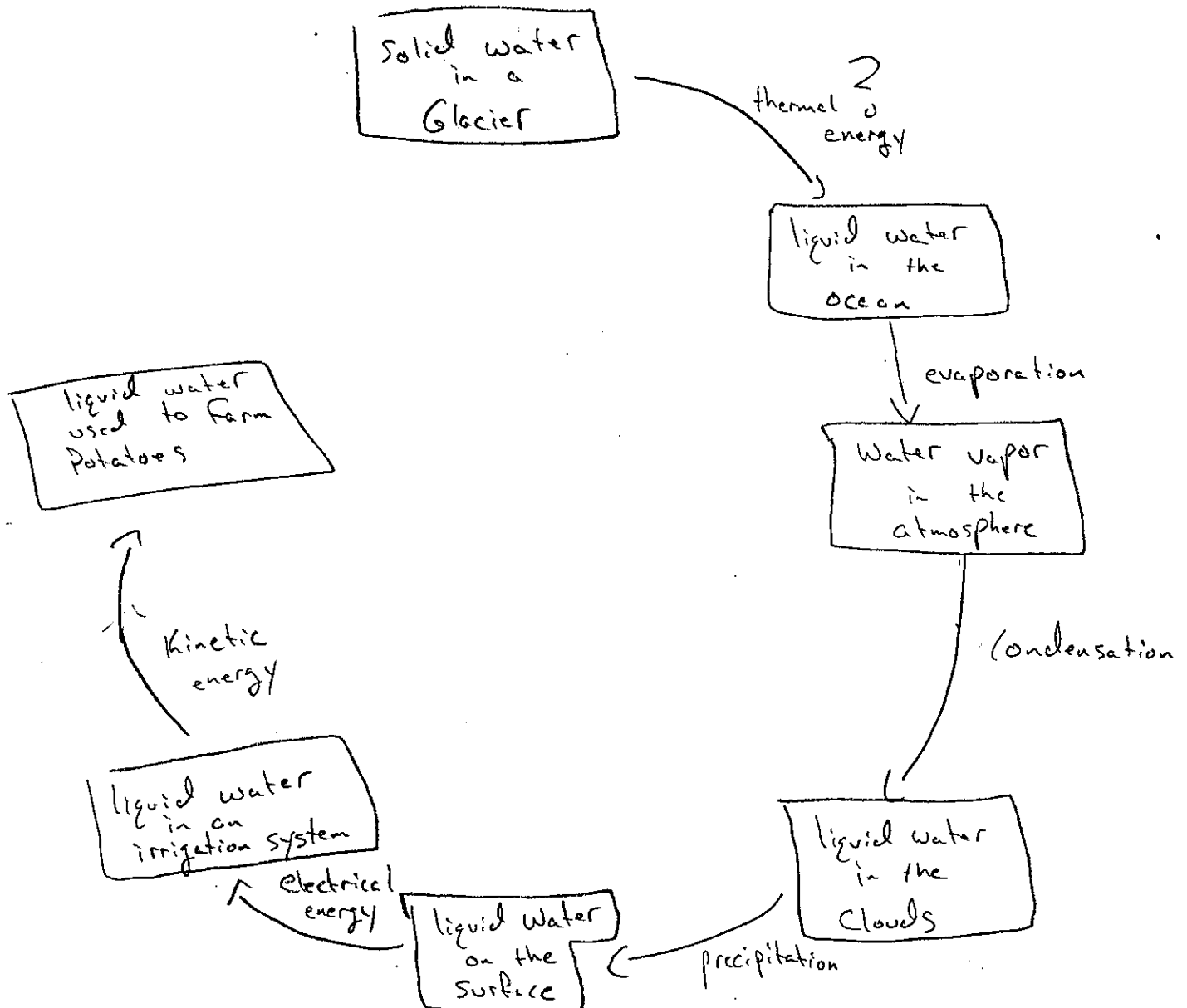
A42154647

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



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A42154647

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation would be affected if polar ice contained more salt than the surrounding seawater because the polar ice would be denser and would therefore be cooler. when exposed to thermal energy. When it melted then, it would displace the more dense, cooler water. This would cause the warmer, saltier water to be exposed to more sunlight, but take a longer time to evaporate, thus causing the water levels to increase slightly. This would affect the entire water cycle because it would cause less precipitation as well.

2

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 27

YOUR SCORE:

52

STUDENT ID #: A43773910; GROUP #: 11

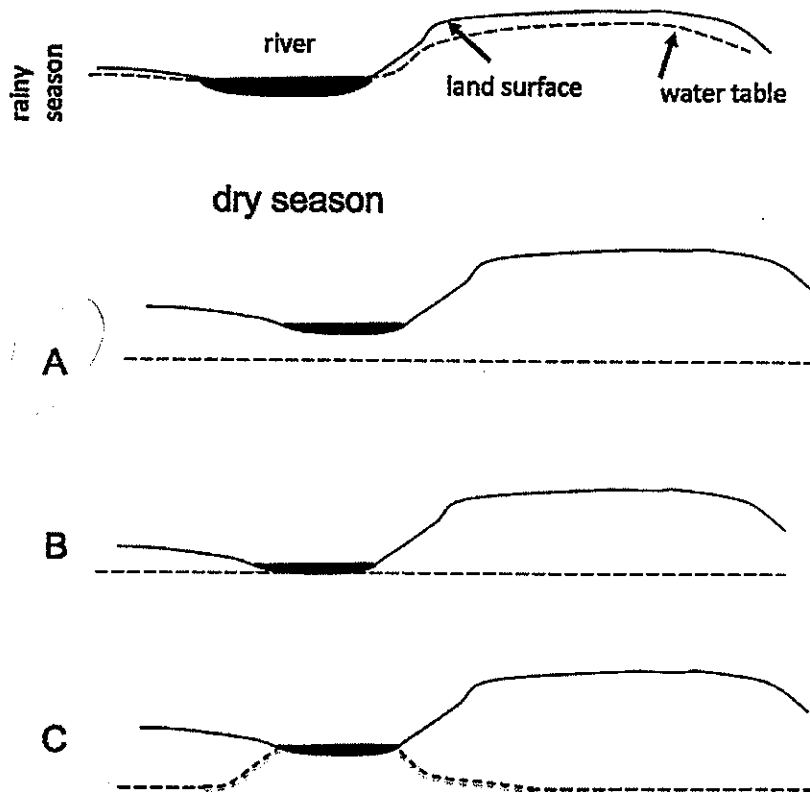
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 5
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. ~~The atmosphere~~
 - b. ~~Oceans~~
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

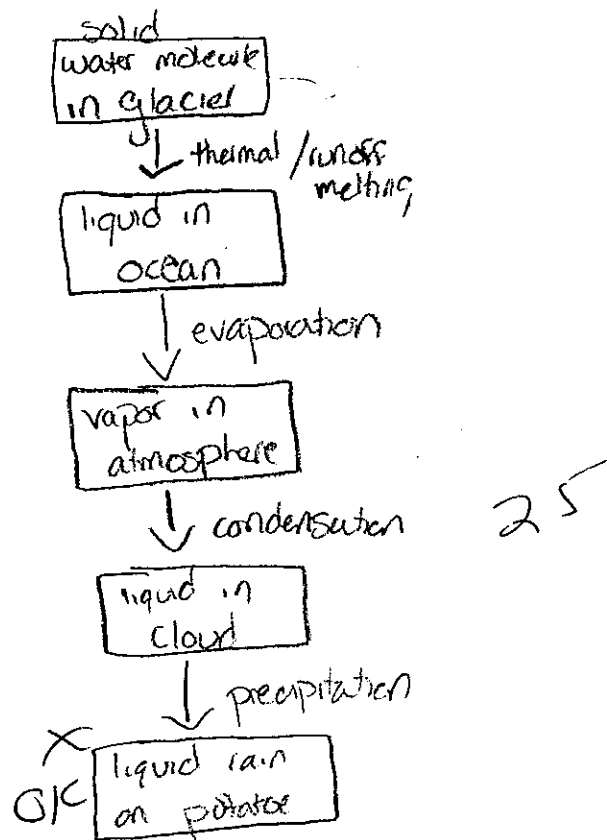
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

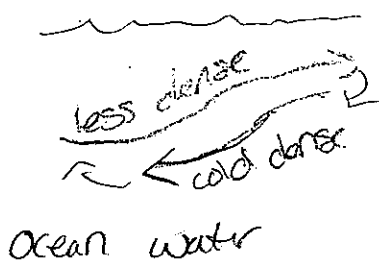
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



If the water molecule starts out in the glacier in a solid form of ice, the water molecule can then undergo thermal energy change of melting into the oceans. From there it is evaporated to become a vapor in the atmosphere. Using thermal energy it then becomes a liquid form in cloud, and the gravitational energy of precipitation over the field where the potato is causes it to soak to the potatoes and become a part of its make up.

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than its surrounding seawater, when it melted (it) would be ^{more} less dense. During ocean circulation the colder, more dense water is pushed to the bottom, causing the less dense water to be risen to the top, which creates circulation. Water density; circulation is affected by temperature; composition



2

When polar ice melts, it's still significantly colder than its surrounding water, so it is circulated to the bottom. If the polar ice contained more salt, this would cause it to be ~~less~~ denser than the surrounding water, which may cause it to not circulate as well, messing up thermohaline circulation.

2 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- They both destroy matter during energy conversion
 - They both convert thermal energy into gravitational energy
 - They both convert chemical energy into thermal energy
 - They both convert kinetic energy into potential energy.

25 29

YOUR SCORE:

54

STUDENT ID #: A42112058; GROUP #: 11

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

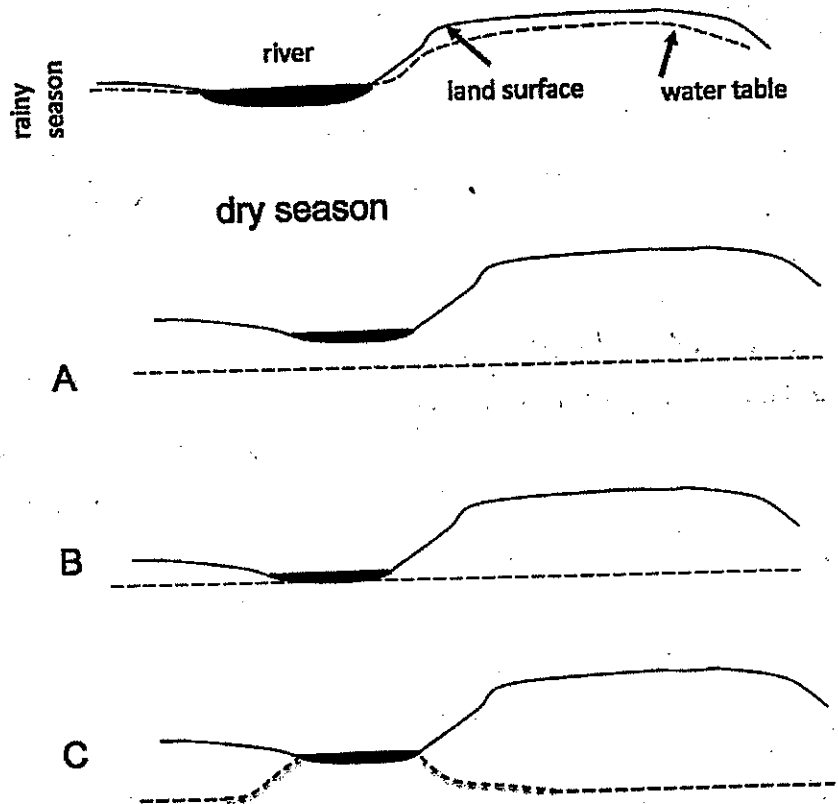
8

1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ~~a. The atmosphere~~
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - ~~a. A= evaporation, B= deposition, C= sublimation~~
 - b. A = condensation, B= precipitation, C= evaporation
 - ~~c. A= sublimation, B= precipitation, C= evaporation~~
 - d. A= precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



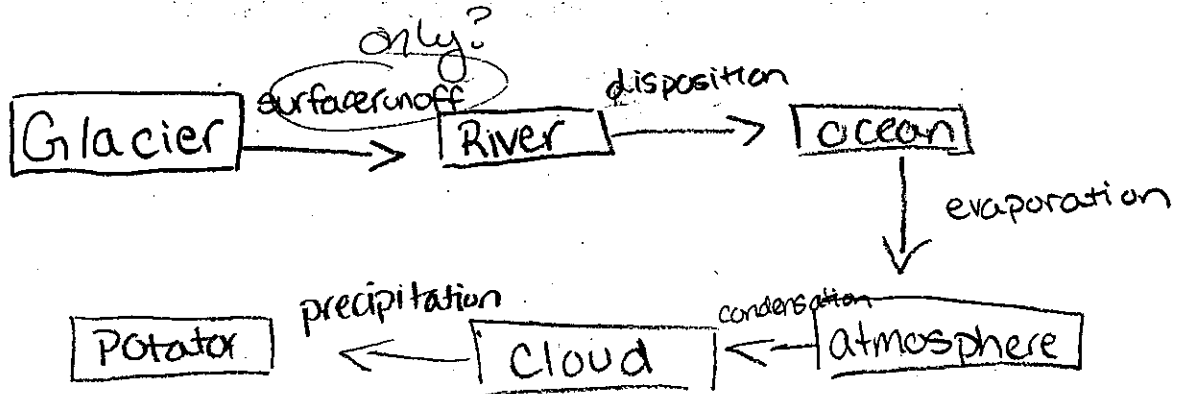
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- been greater
 - been less
 - remained the same
10. What happens when plants respire?
- Plants convert biomass into energy
 - Plants convert energy into biomass
 - Plants release energy

A42112058

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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The melting glacier creates surface runoff into the river that disposes into the ocean. Where evaporation occurs into the atmosphere, then condensation begins to form a cloud that precipitates rain to water the potato seed that grows a potato.

A42112038

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

The thermohaline circulation in oceans would change if polar ice contained more salt than surrounding seawater by the fact that if the polar ice would have more salt that it wouldn't freeze creating tons more sea water in the water cycle. The circulation needs to stay in an equilibrium because this cycle is keeping water moving continuously in the earth. This circulation is caused by energy in different forms, such as chemical energy, gravitational energy, and thermal energy. Without those 3 energies the cycle would no longer be in circulation.

5

8 EXTRA CREDIT (2 points)

- EC. How are burning wood and respiration similar?
- a. They both destroy matter during energy conversion
 - b. They both convert thermal energy into gravitational energy
 - c. They both convert chemical energy into thermal energy
 - d. They both convert kinetic energy into potential energy.

40 22

YOUR SCORE:

62

A43835916

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

STUDENT ID #: A43835916; GROUP #: 11

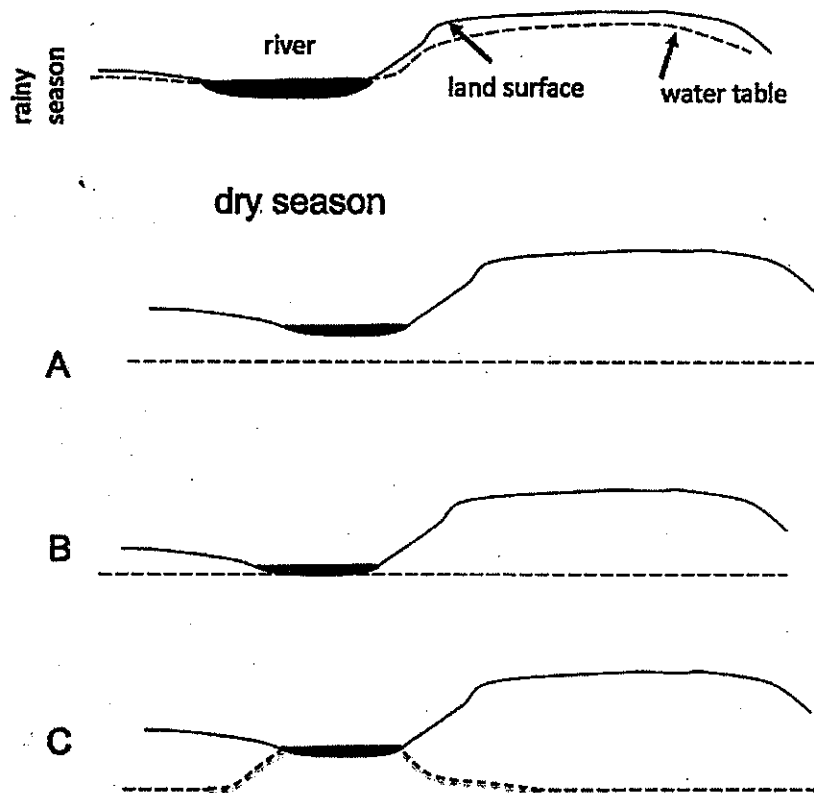
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 9
1. What happens when water molecules condense?
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
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 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

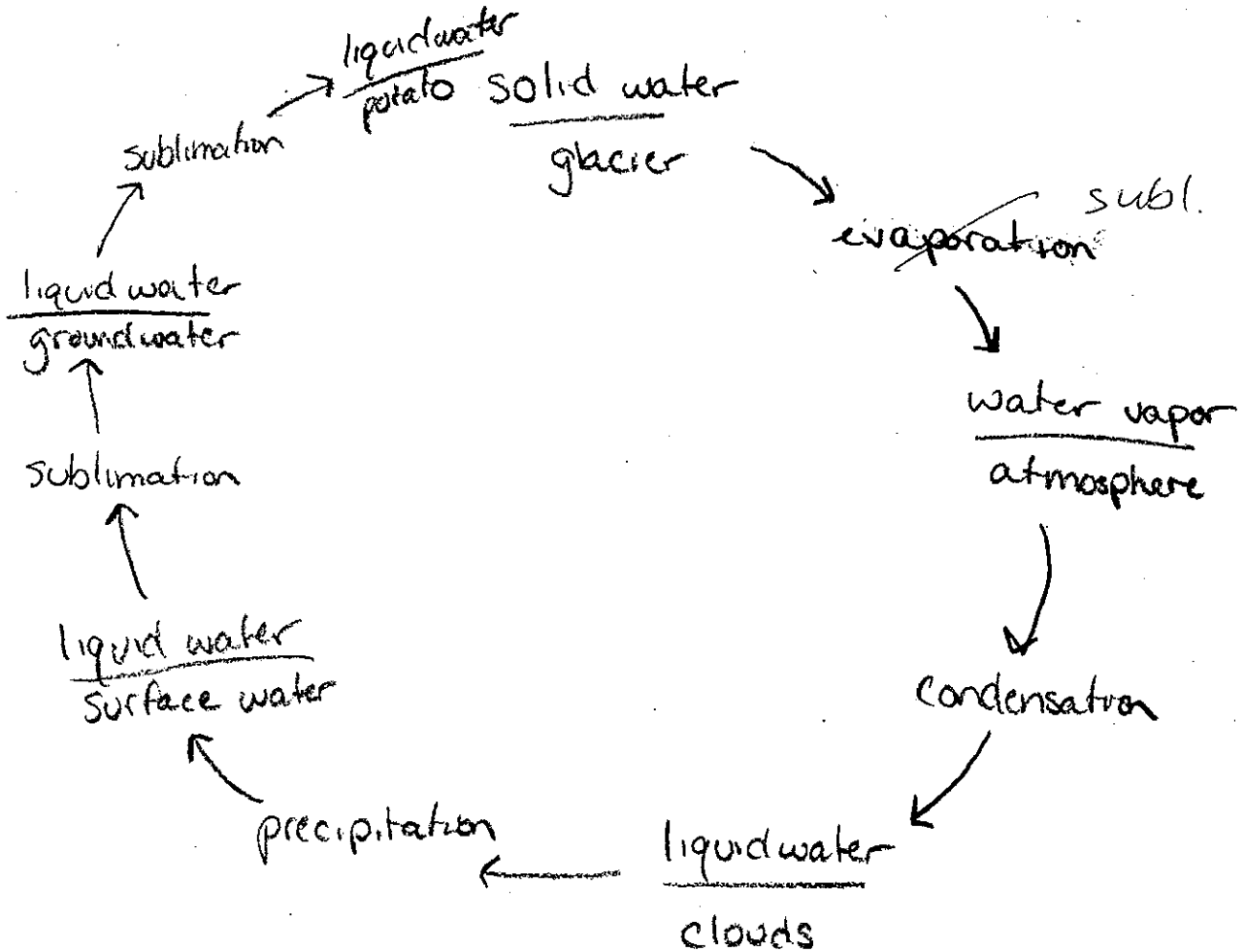


9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

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2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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Thermohaline circulation is the process that allows salt water to rise over freshwater. Because salt water is less dense than freshwater, the salt water rises. If polar ice contained more salt, I do not believe it would have much of an affect on the thermohaline circulation in the oceans. The ocean water would altogether be less salty but thermohaline circulation would still occur because there is still salt. Overall, I believe the biggest difference that would be made if polar ice contained more salt would be that freshwater would be even more difficult to obtain.

5

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 29

YOUR SCORE:

74

STUDENT ID #: A40920866; GROUP #: 12

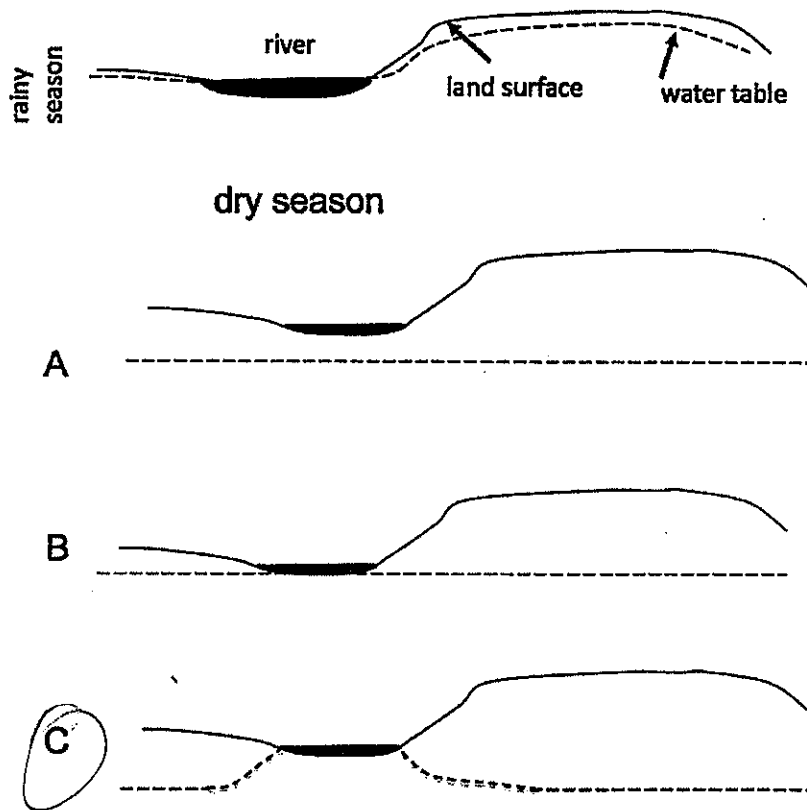
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 6
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☒ d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



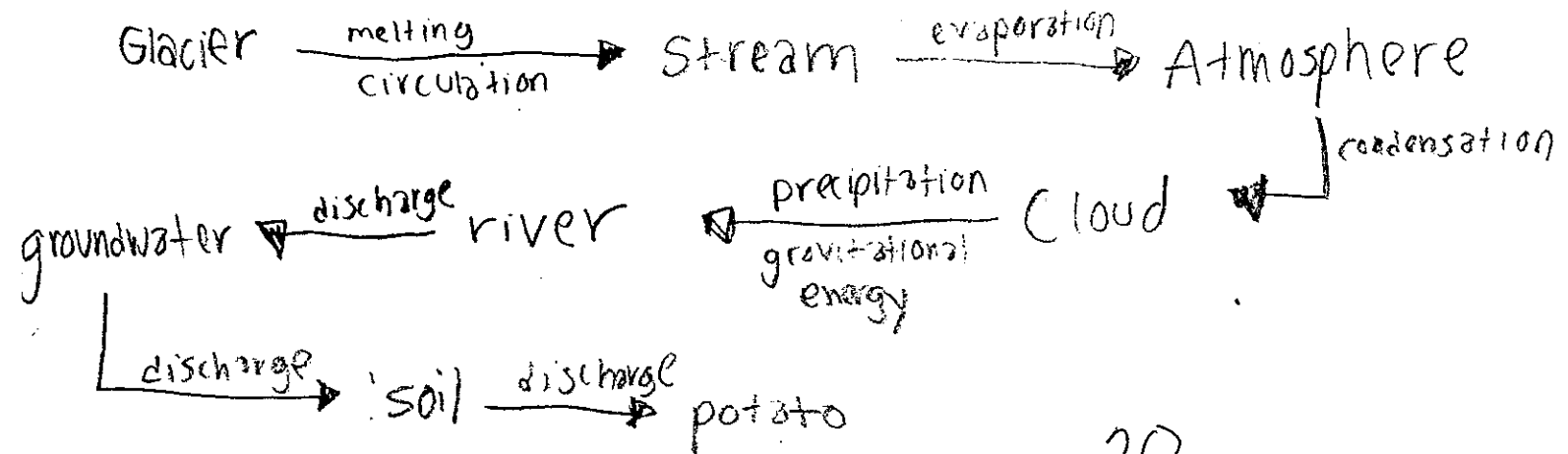
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A40920866

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



20

The glacier could melt due to circulation of heat and become another water source such as a stream. That could then evaporate into the atmosphere, condense and become a cloud. Due to gravitational energy precipitation could then occur causing the water to go into a reservoir such as a river. Discharge from that reservoir to the ground from gravitational energy would put water into the soil—soil water is transferable to potatoes that grow in that soil.

A 40920866

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Circulation initially occurs as a result of the change in densities that accompanies temperature changes. For example, the warmer something gets the less dense it will be. When salt is thrown into this framework of how circulation operates it adds to the density of whichever water source it inhabits. This in turn makes the reservoir that it leaves become less dense. The seawater in polar regions would then evaporate more rapidly? as a result of its loss in density and the polar ice would take longer to change out of its condensed form. This changes the thermohaline circulation by making it occur faster due to the proportional density changes between ice & water. Gravitational energy would quicken the pace of circulation after being quickened from the decrease in density. 5

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 25

YOUR SCORE:

55

STUDENT ID #: A43272425; GROUP #: 12

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

9

- ☐ a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
☐ c. Hydrogen and oxygen atoms combine to form liquid water
☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
☒ b. Oceans
☐ c. Glaciers
☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
☐ b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
☐ c. A= sublimation, B= precipitation, C= evaporation
☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

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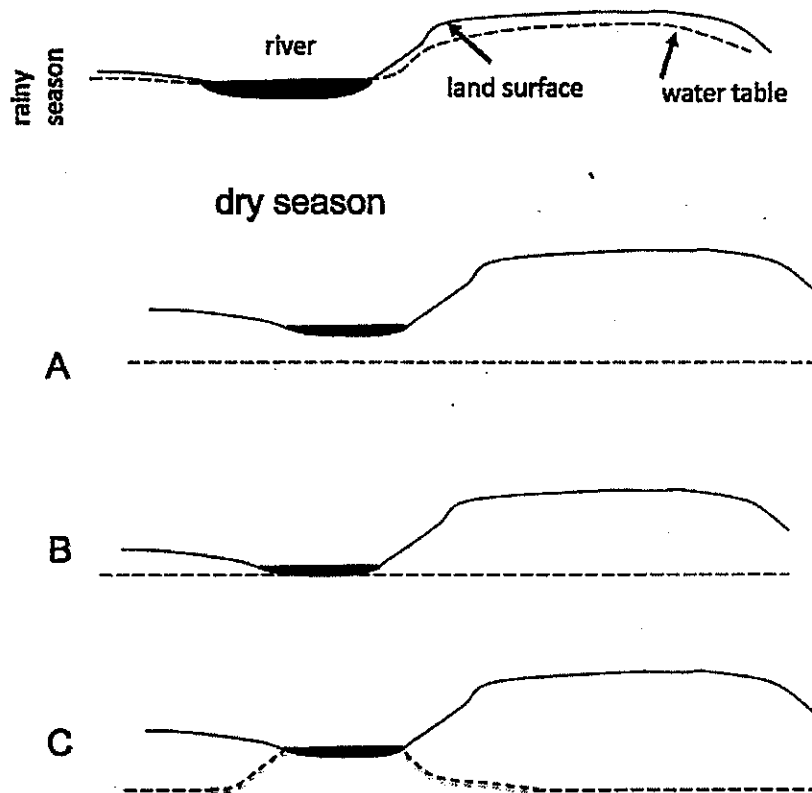
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- ☒ a. This is what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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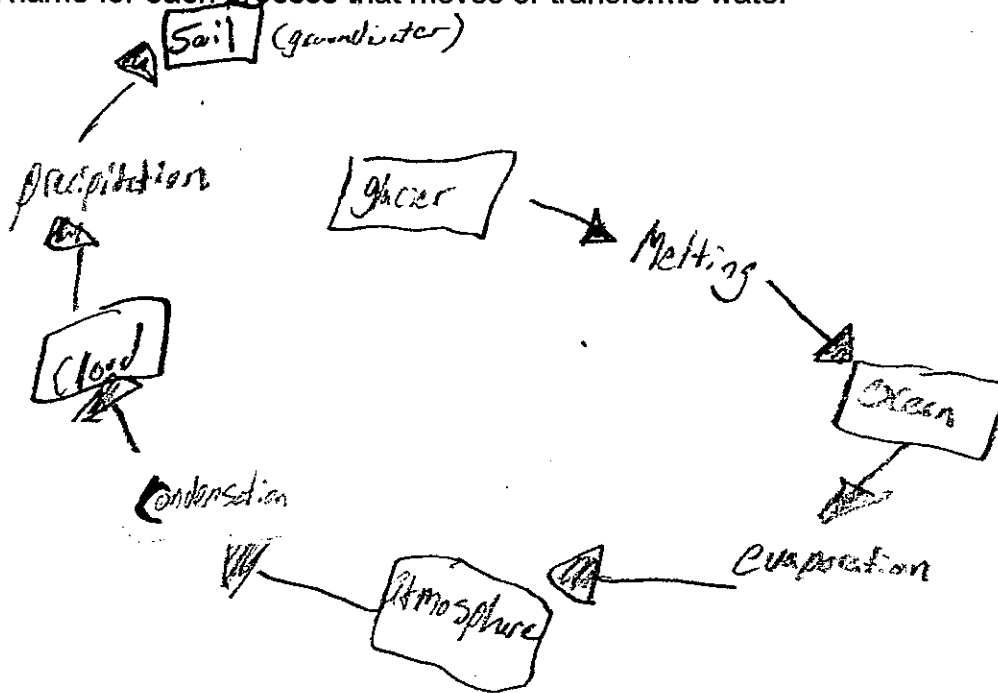
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A43272425

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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20

A43272425

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

If polar ice contained more salt than the surrounding seawater when the ice melted it would transfer more salt into the oceans making thermohaline circulation also require more time for the salt to ~~evaporate~~ because the salinity of the water has increased. Evaporation and melting are causing the movement of water because as the ice melts it increases the amount of time as water due to a slower evaporation process. Thermohaline circulation would increase with a rise in salinity of the seawater.

Salt does not evaporate

7 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 20
YOUR SCORE:
65

STUDENT ID #: A43365634; GROUP #: 12

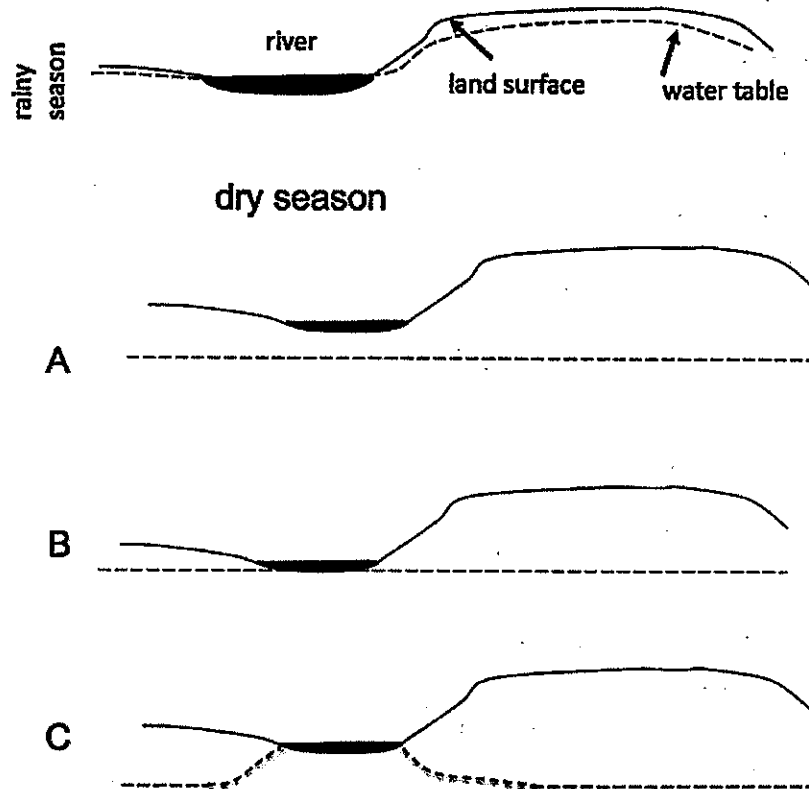
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 7
1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
 2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
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 3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
c. Ground water from beneath the surface
 4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
 5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
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 6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
- b. A = gravitational, B = gravitational, C = thermal
- c. A = gravitational, B = thermal, C = thermal
- d. A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

A43366634

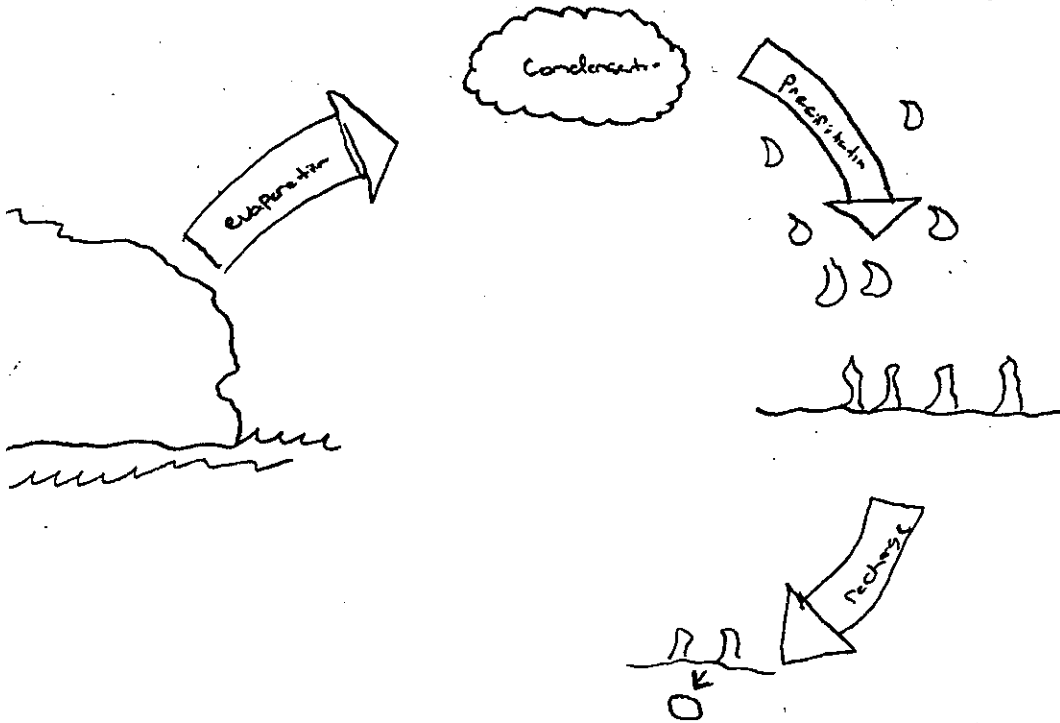
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



Water from a glacier could naturally move to a potato

By ~~evaporating~~ ^{subl.} from a glacial form (solid) into a gaseous form in the atmosphere then the water vapor would condense into a liquid form then gravitational energy

would force the water to precipitate to become

surface water. The surface water would then recharge a subsurface

into ground water where the potato is growing

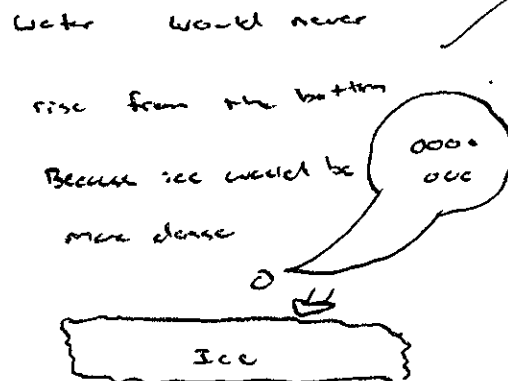
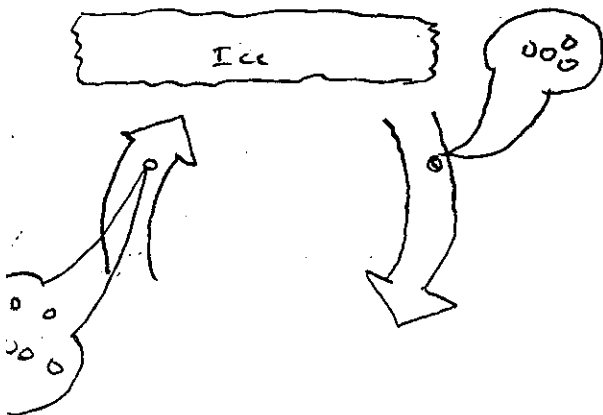
A43365634

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.



Thermohaline circulation would change because it would disrupt the natural cycle of water gaining thermal energy thus heating up the molecules allowing water to rise. Because it becomes less dense than the surrounding water and once it rises, it cools off and becomes more dense than the surrounding water and gravitational energy brings it back down and creates a cycle.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37
YOUR SCORE:
72

STUDENT ID #: A43506836; GROUP #: 17

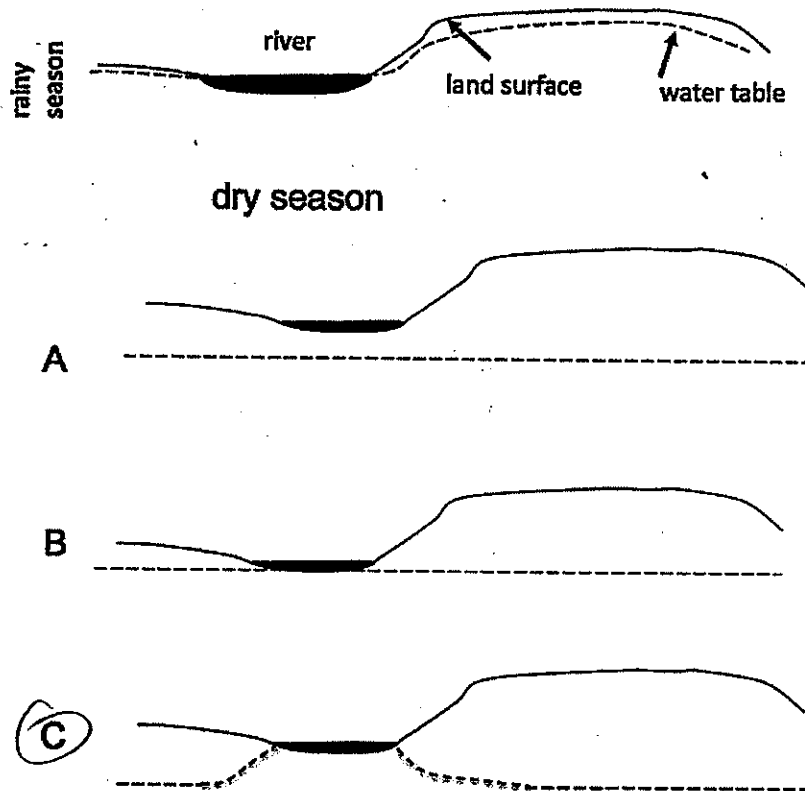
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
~~a. Water molecules become larger~~
☒ b. Gaseous water becomes liquid water
~~c. Hydrogen and oxygen atoms combine to form liquid water~~
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
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☒ c. Glaciers
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a. ~~A = chemical, B = thermal, C = thermal~~
 b. A = gravitational, B = gravitational, C = thermal
 c. A = gravitational, B = thermal, C = thermal
 d. ~~A = thermal, B = thermal, C = thermal~~

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
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 c. ~~remained the same~~
10. What happens when plants respire?
 a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A43506836

ISP 203A: GLOBAL CHANGE

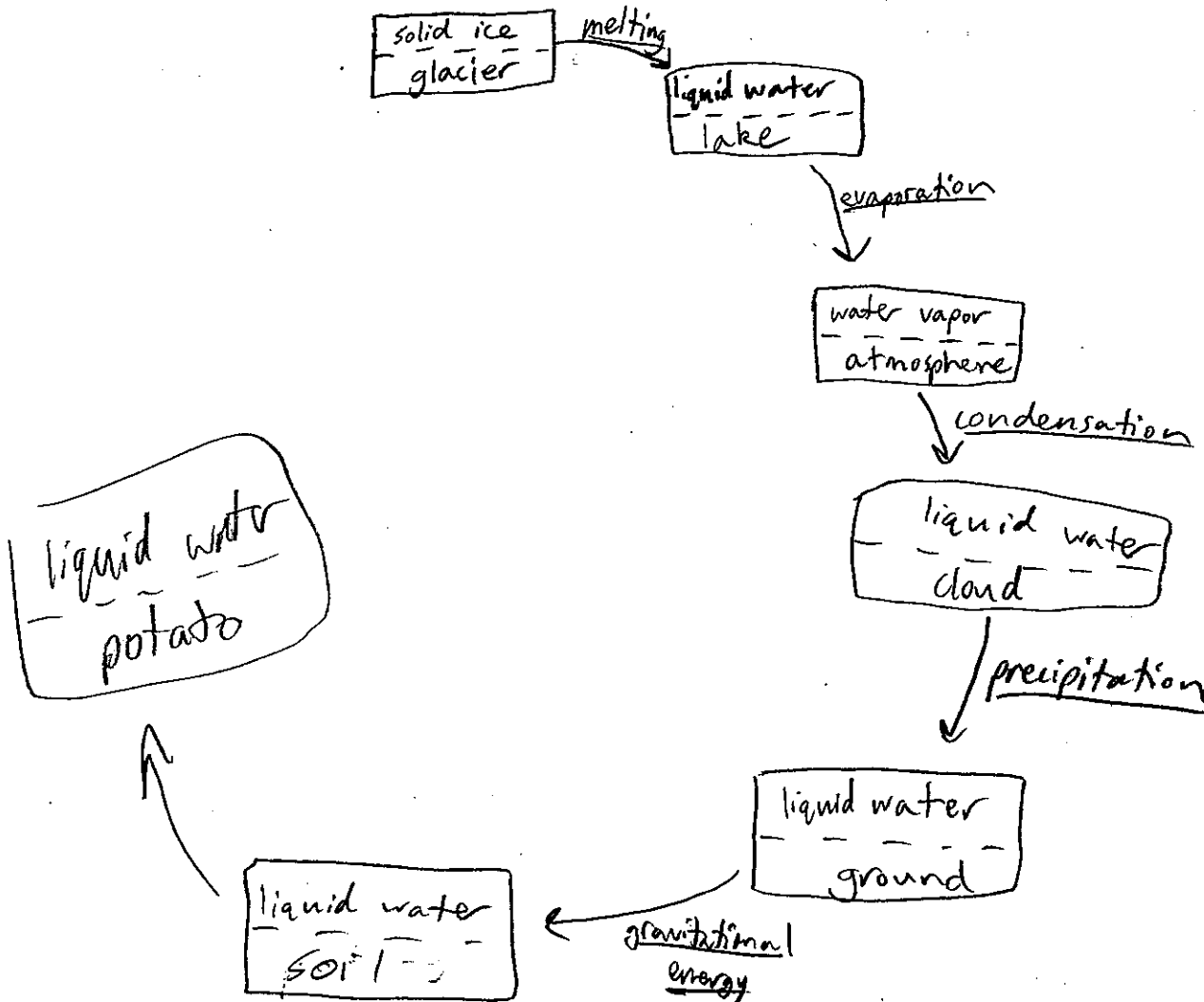
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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25

A435 06836

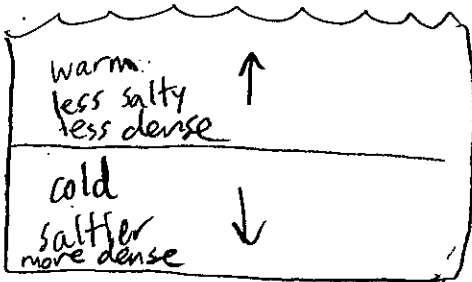
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Thermohaline circulation is caused by differences in density. The less dense, warmer, less salty, water will rise, while the more dense, colder, saltier water will sink. Thermal energy causes water to warm and rise, while gravitational energy causes denser water to sink. If polar ice contained more salt, it would be more dense than the surrounding seawater and it would sink. f? 5



2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- ~~They both destroy matter during energy conversion~~
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 32

YOUR SCORE:

77

STUDENT ID #: A 42957208; GROUP #: 13

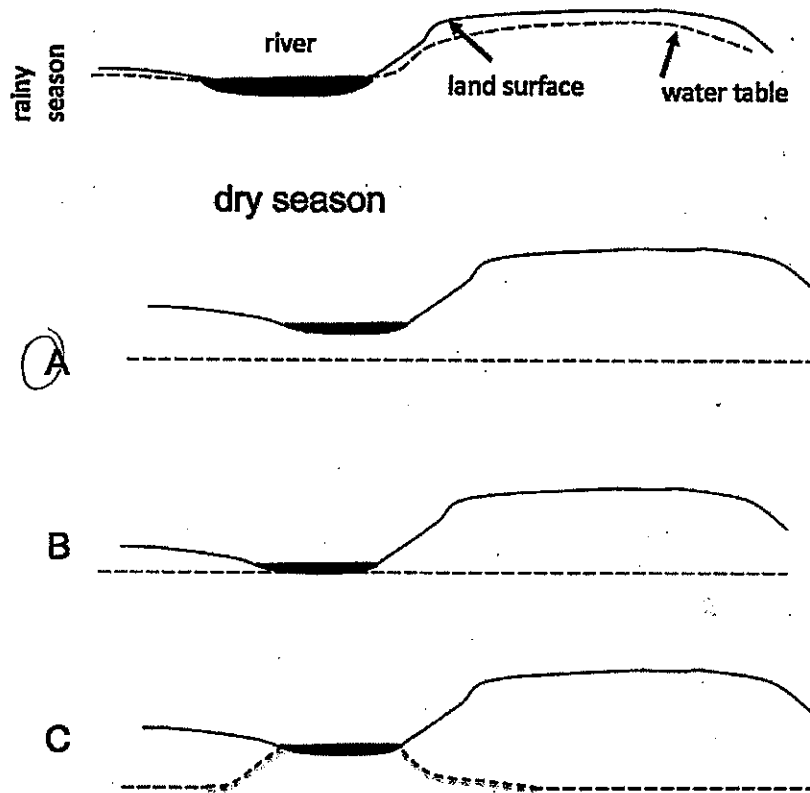
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 5
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - ☒ a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
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 - c. A= sublimation, B= precipitation, C= evaporation
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 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

A42957208

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

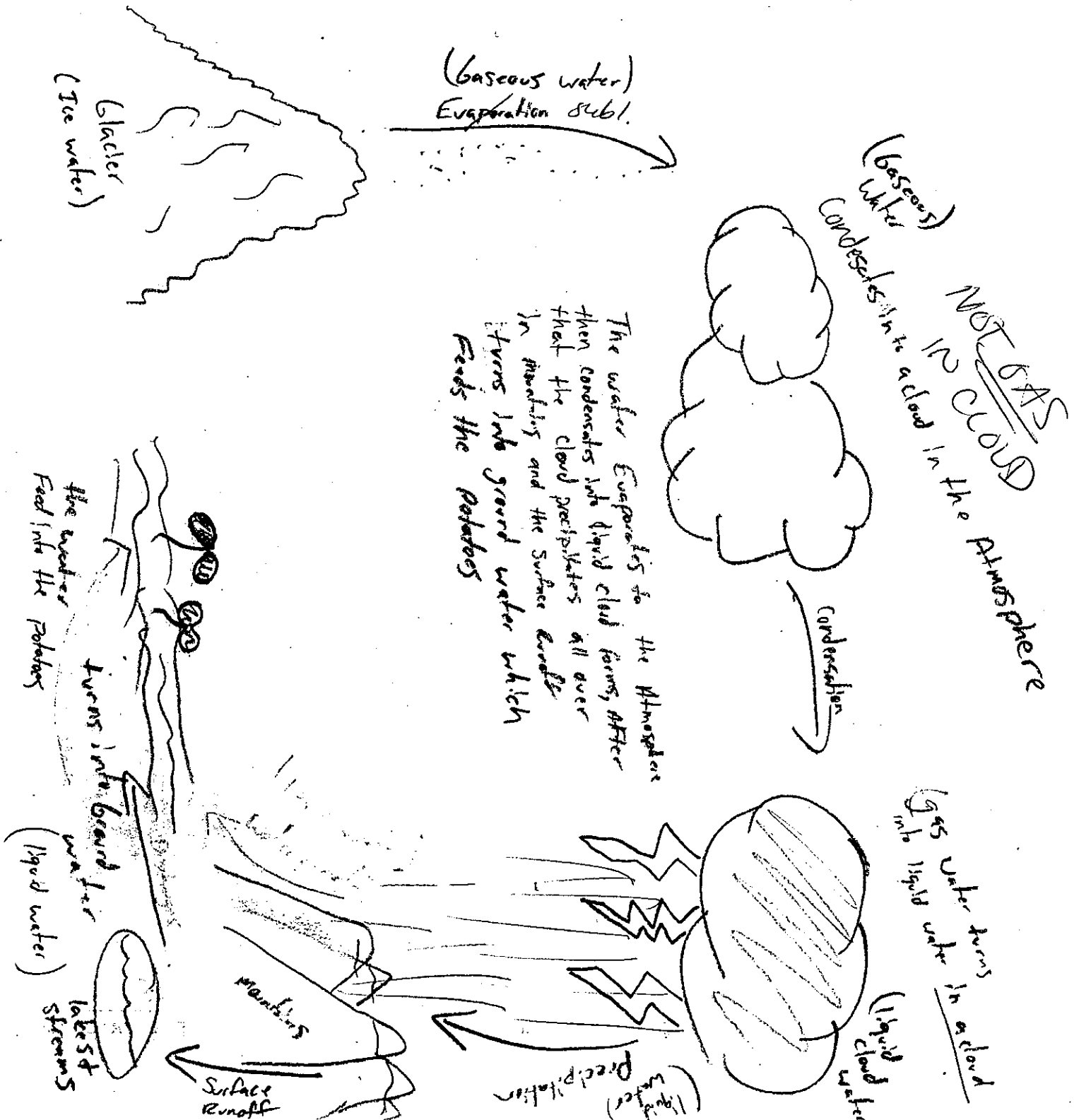
3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
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18



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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5 If polar ice contained more salt than the surrounding sea water, it would change the circulation by slowing it down. For something with salt in it to freeze, it needs to be at a lower temperature compared to as if it didn't have salt in it. Since the water needs to be colder, there is less heat.

not so much in oceans
Temperature is what causes the circulation of water. As heat rises, water molecules will heat up at the top, then cool down and drop lower, resulting in circulation. So if there is less heat because of the salt in the polar ice, there is less circulation.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 25

YOUR SCORE:

50

STUDENT ID #: A43819247; GROUP #: 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

5

- ☐ a. Water molecules become larger
- ☐ b. Gaseous water becomes liquid water
- ☒ c. Hydrogen and oxygen atoms combine to form liquid water
- ☐ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☐ a. The atmosphere
- ☐ b. Oceans
- ☒ c. Glaciers
- ☐ d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☐ a. Rainfall and surface runoff into the lake
- ☐ b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ☐ a. A= evaporation, B= deposition, C= sublimation
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ☐ c. A= sublimation, B= precipitation, C= evaporation
- ☐ d. A = precipitation, B= freezing, C= condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☐ a. Liquid water from the pot condenses
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- ☐ c. Water vapor from the pot condenses
- ☒ d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☐ a. This is what one would predict with global warming
- ☐ b. This is the opposite of what one would predict with global warming
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A43819247

ISP 203A: GLOBAL CHANGE

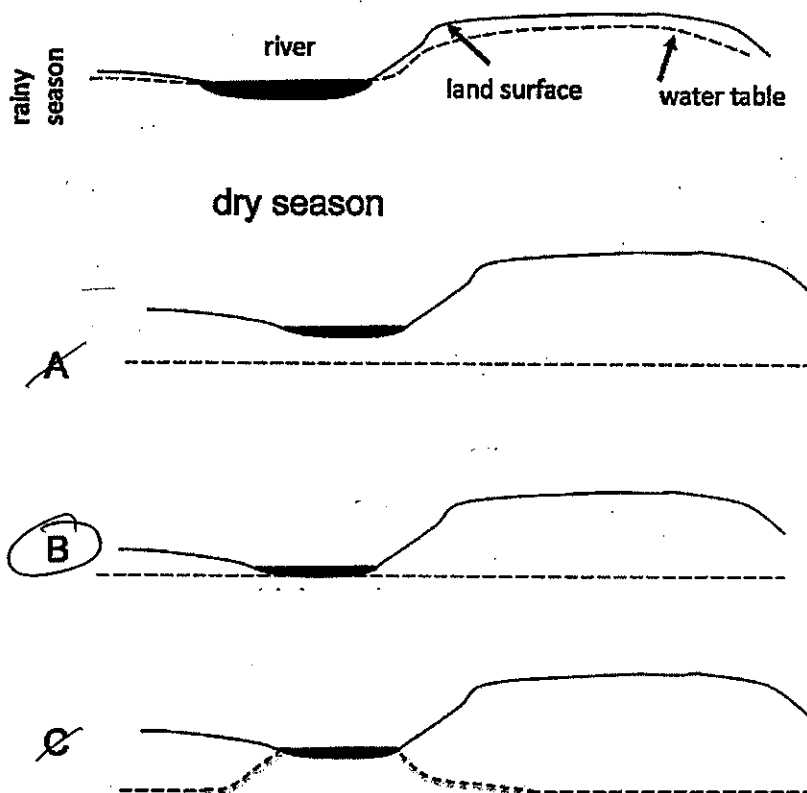
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- ☒ c. A = gravitational, B= thermal, C= thermal
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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?

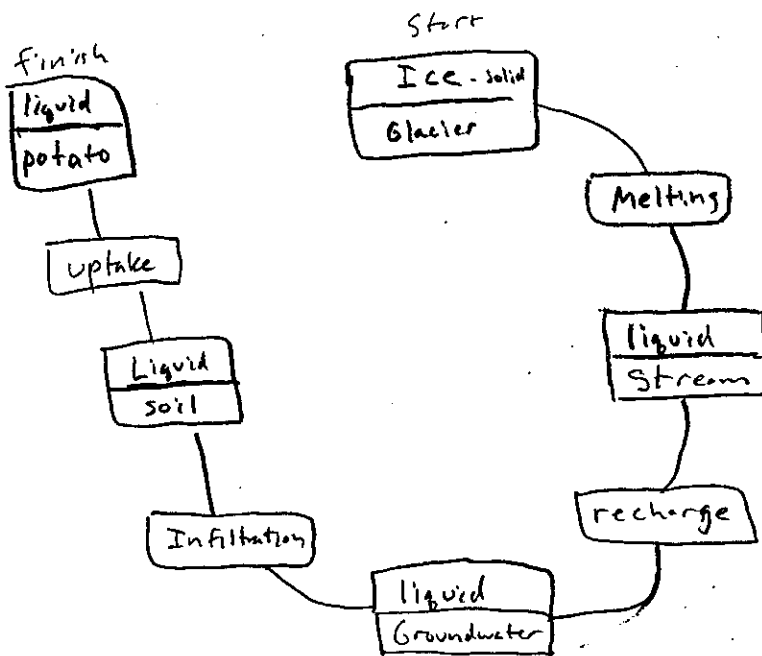


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- ☒ a. been greater
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10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
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A43819247

SHORT ANSWER. 25 points each (50 points total)

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25

A43819247

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

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$\uparrow T, \downarrow D \quad \uparrow D, \uparrow P$

Thermohaline circulation in oceans would not change if polar ice contained more salt than the surrounding seawater from which it freezes. Since fresh water is less dense

than salt water, fresh water stays atop salt water. polar

? Ice comes from the equatorial region during ocean circulation.

In ocean circulation, warm water in the equatorial region makes its way up to the polar regions due to density/pressure

differences. More temperature means less density, and salt is denser than fresh water, so salt water stays below

fresh water. Therefore the ice would continue to contain less salt than the surrounding seawater from which it freezes.

BUT if ... ?

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

25 42

YOUR SCORE:

67

STUDENT ID #: A42097647; GROUP #: 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
☐ a. Water molecules become larger
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A42097647

ISP 203A: GLOBAL CHANGE

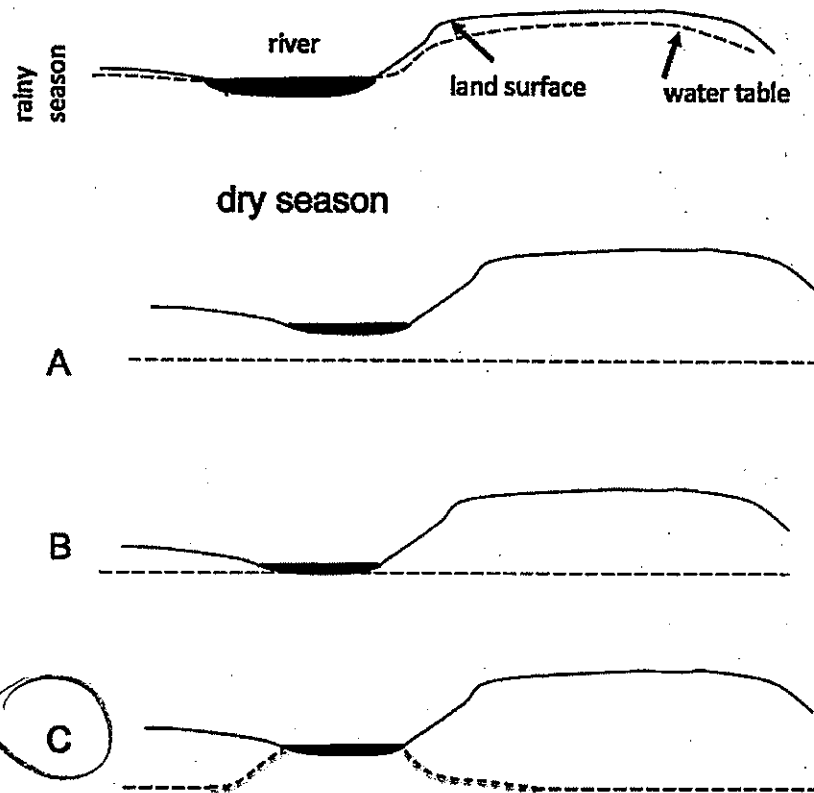
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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 b. A = gravitational, B= gravitational, C= thermal
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A42097647

ISP 203A: GLOBAL CHANGE

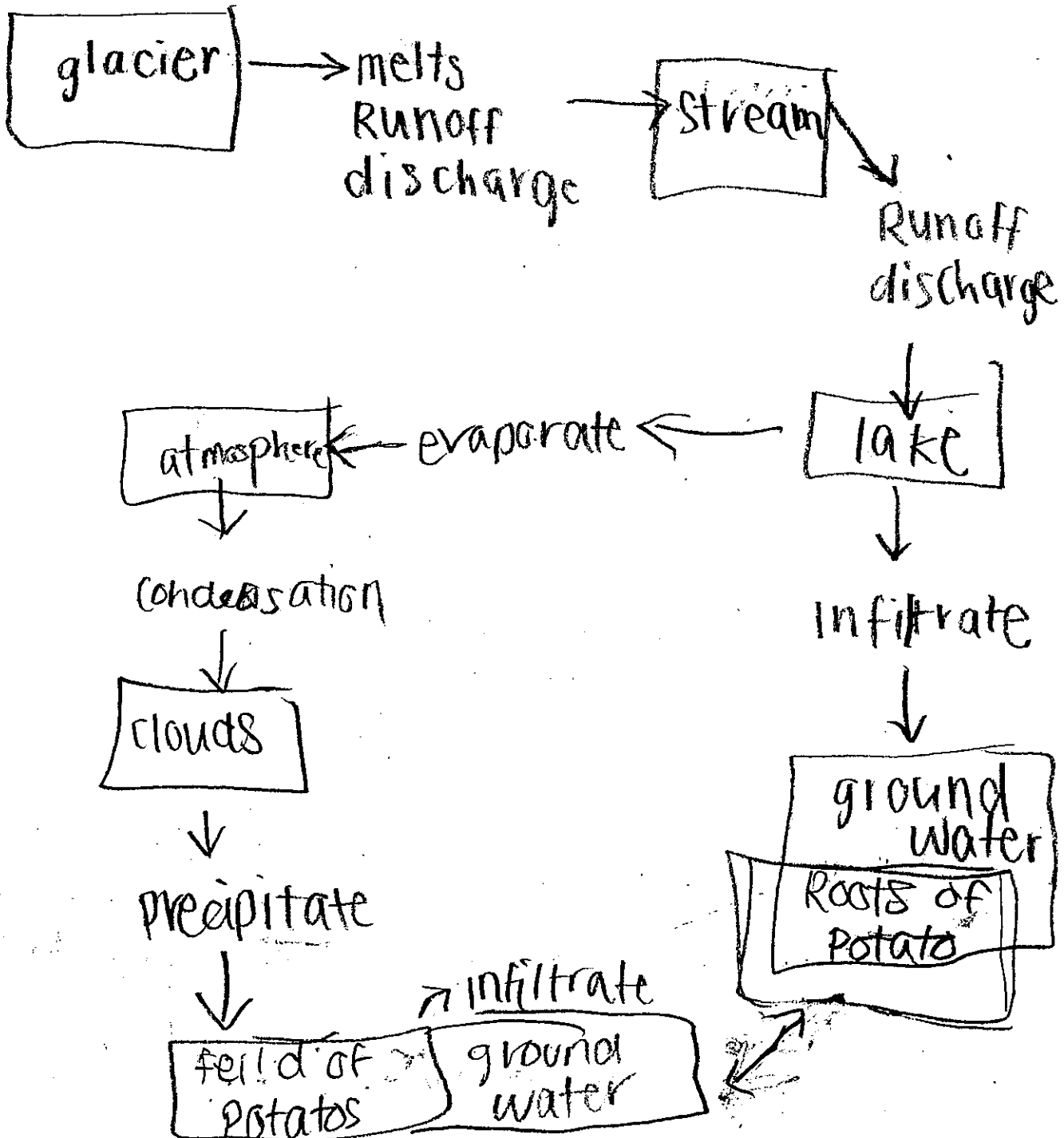
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

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A42097647

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

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 - b. The energy that is causing movement or transformation of water.

15 thermohaline causes warmth from equator to circulate to polar regions & the cold to circulate back to the equator through convection, since warm air rises from less density and cool air sinks, all caused by heat temperatures and winds from solar radiation. If polar ice contained more salt ~~more~~ the circulation would change ^{now?} since salt water sinks the warm water to cold, and the more salt ~~the~~ the more cold water, and freezing.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

- I apologize for my handwriting, I tried my best!
40 xelsey 37

YOUR SCORE:

77

STUDENT ID #: A42096024; GROUP #: 13

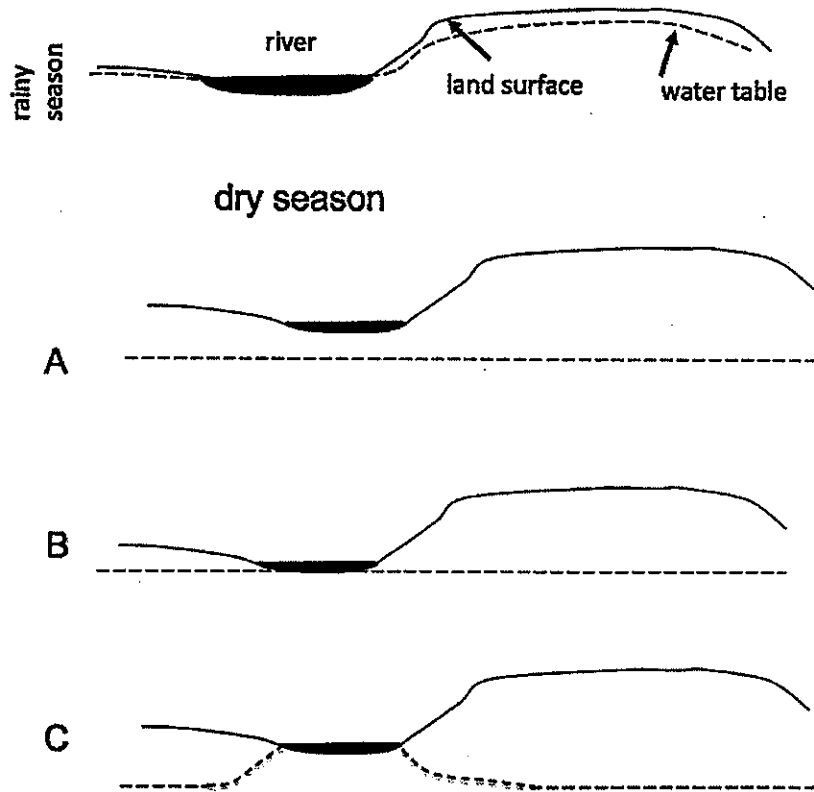
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

- 8
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 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

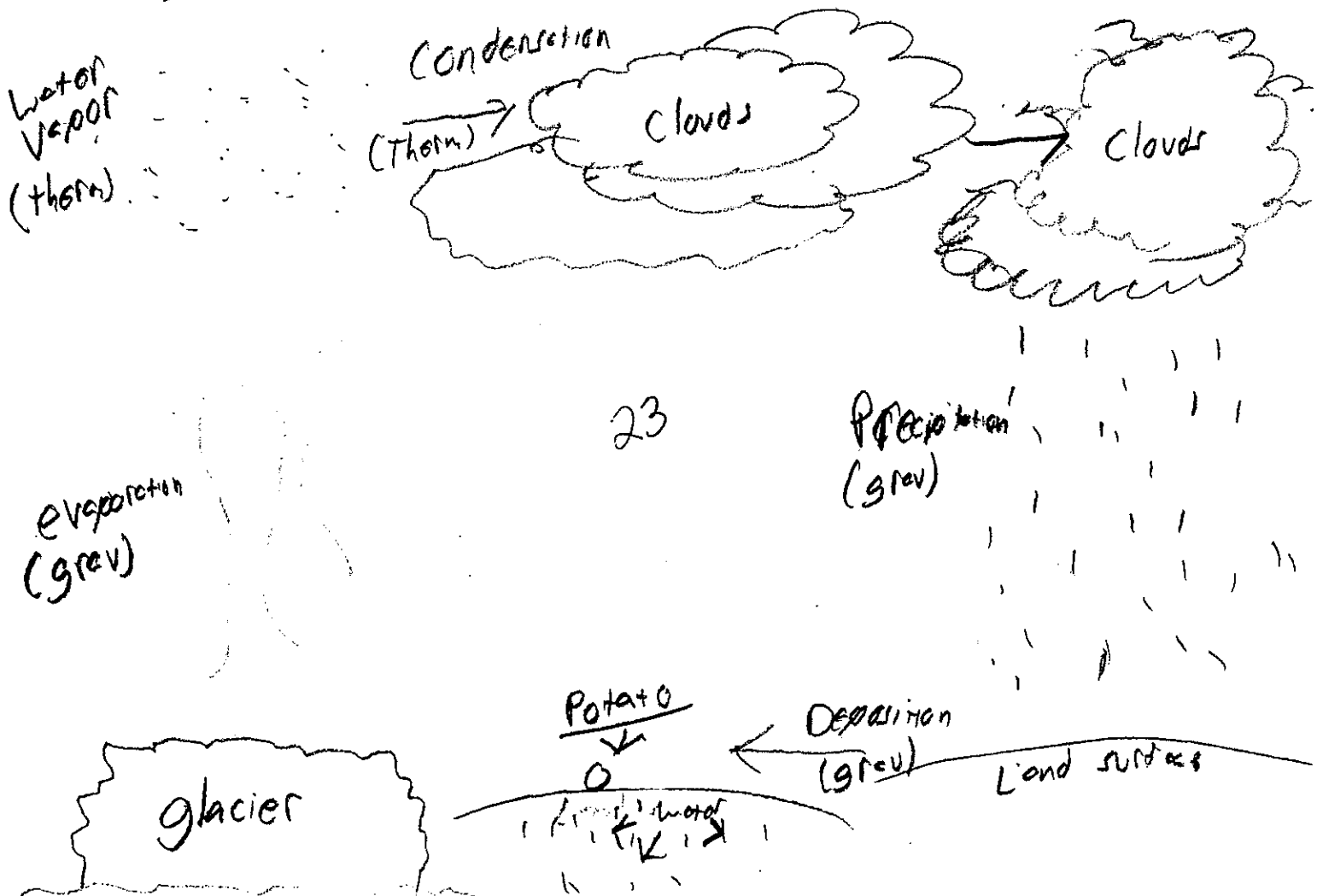
A42096024

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

1. ~~Evaporation~~ ^{or liquid H₂O} from glacier ^(ICE) to atmosphere ^{to liquid water?}
2. Condensation from water vapor in atmosphere to cloud ^(Thermal)
3. Precipitation from cloud to land surface ^(gravitational)
4. Deposition of liquid H₂O from surface to groundwater ^(gravitational)
5. End in potato



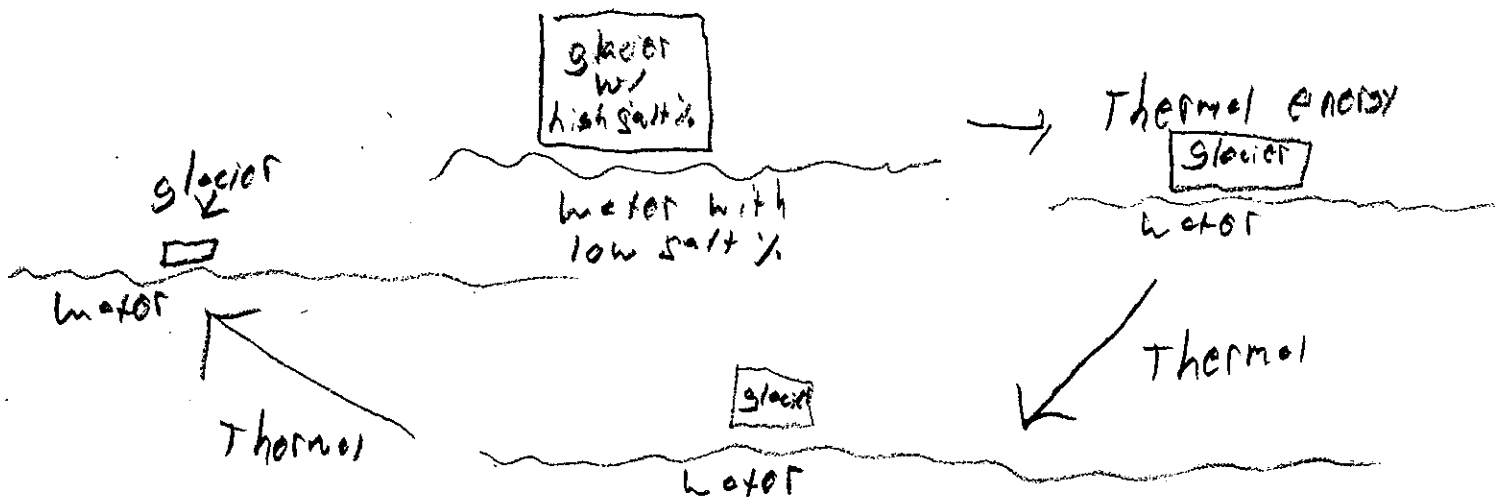
2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

The thermohaline circulation cycle in oceans would speed up. If the glaciers contained more salt than the surrounding seawater, said glaciers would have a higher melting point. What would result would be exponentially quicker melting as the glaciers release more and more water and said water further increases the ocean's temp. resulting in more melting.

2



2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 27

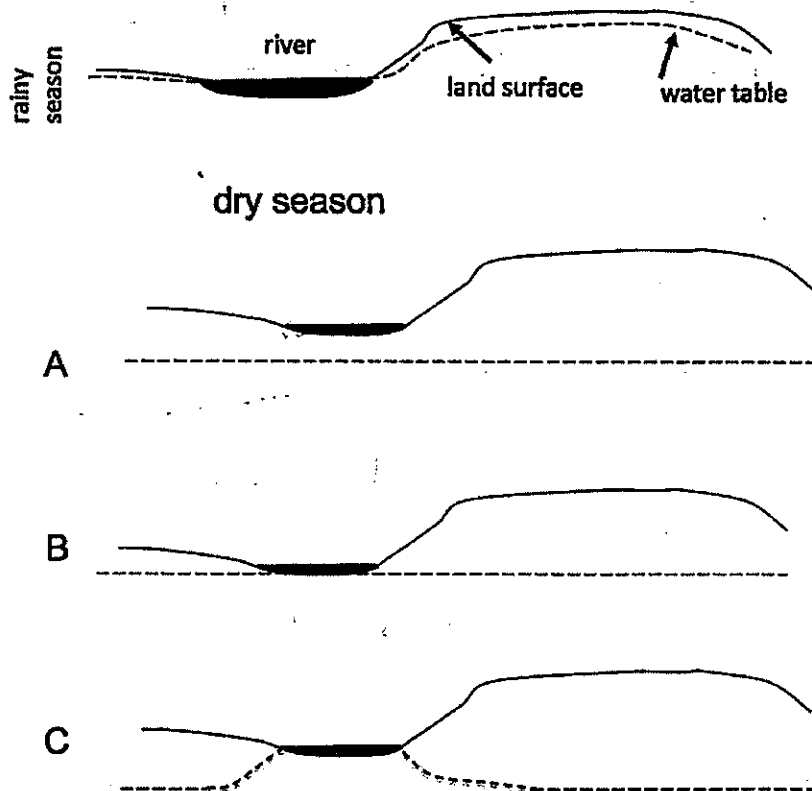
YOUR SCORE:

67

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
- b. A = gravitational, B= gravitational, C= thermal
- c. A = gravitational, B= thermal, C= thermal
- d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

~~XXXXXXXXXXXX~~
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

1

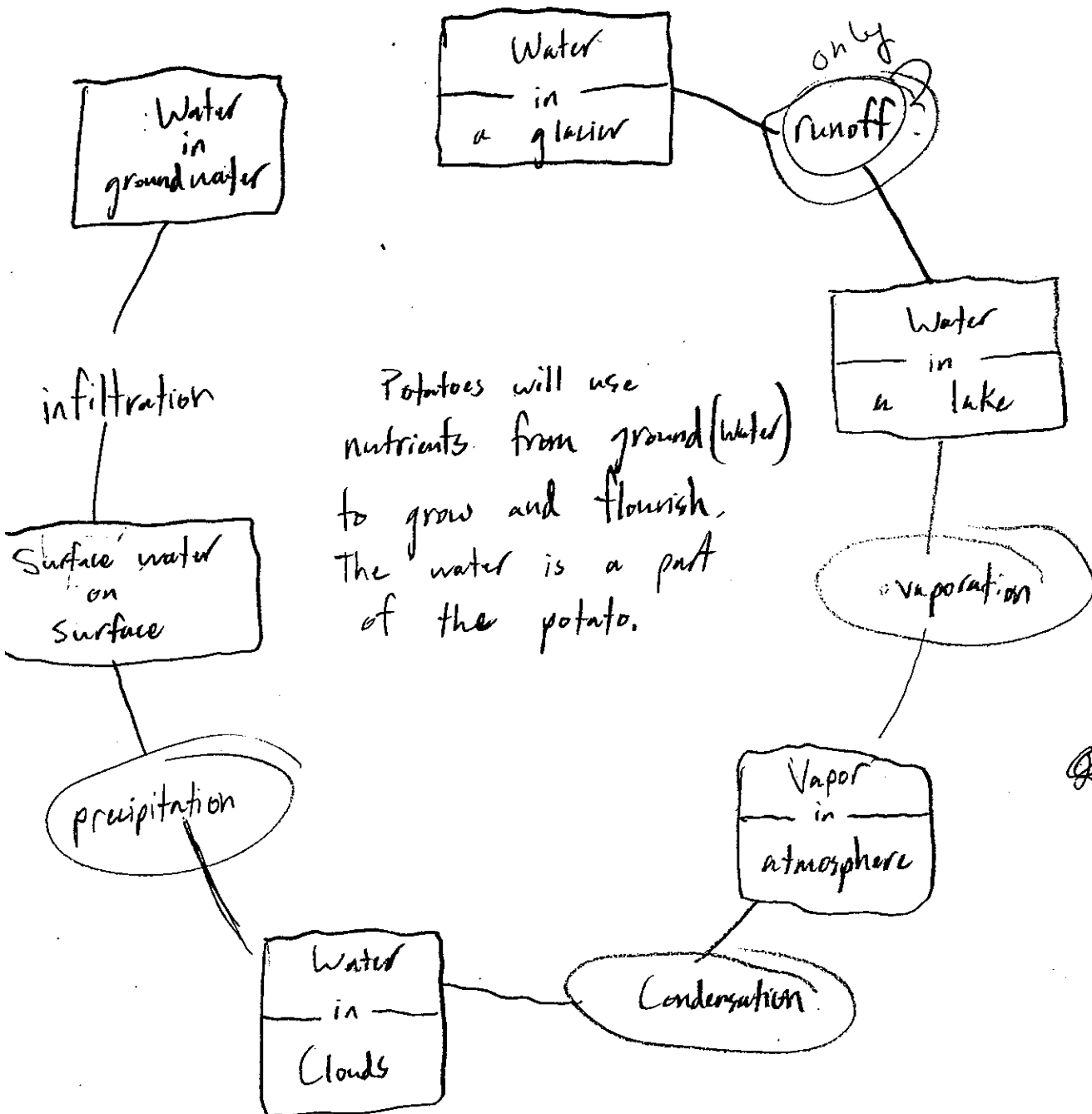
STUDENT ID #: A 42123279 ; **GROUP #:** 13

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 9
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A , then becomes water in a glacier through the process of B , and then becomes water in clouds through the process of C .
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

SHORT ANSWER. 25 points each (50 points total)

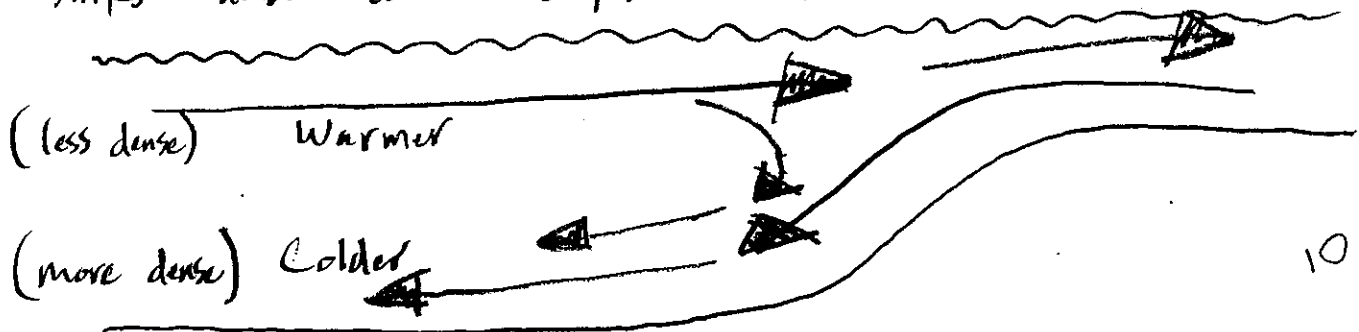
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



A42123279

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

Circulation is happening due to density differences of warm and cold haline liquid (sea water). Cold water sinks and warm water rises. ~~not sea~~



If polar ice contained more salt than surrounding water, the ice would become more dense and sink. This could potentially create cooler water at lower temperatures. Overall thermohaline circulation temperature would decrease. Colder water closer to the sea floor would stay cold longer (due to the ice) and surface water would continue to be warmed by the sun.

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

45 28

YOUR SCORE:

73

STUDENT ID #: A43219269; GROUP #: 14

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

- 7
- a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - ☒ d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- a. The atmosphere
- b. Oceans
- ☒ c. Glaciers
- d. Lakes and streams

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- ☒ a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the ^{gas}atmosphere becomes water in a ^{liquid}cloud through the process of condensation, then becomes water in a ^{solid}glacier through the process of deposition and then becomes water in clouds through the process of sublimation.

- ☒ a. A = evaporation, B = deposition, C = sublimation
- ☒ b. A = condensation, B = precipitation, C = evaporation
- ☒ c. A = sublimation, B = precipitation, C = evaporation
- ☒ d. A = precipitation, B = freezing, C = condensation

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- a. Liquid water from the pot condenses
- ☒ b. Liquid water from the pot evaporates
- ☒ c. Water vapor from the pot condenses
- d. Water vapor from the pot evaporates

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

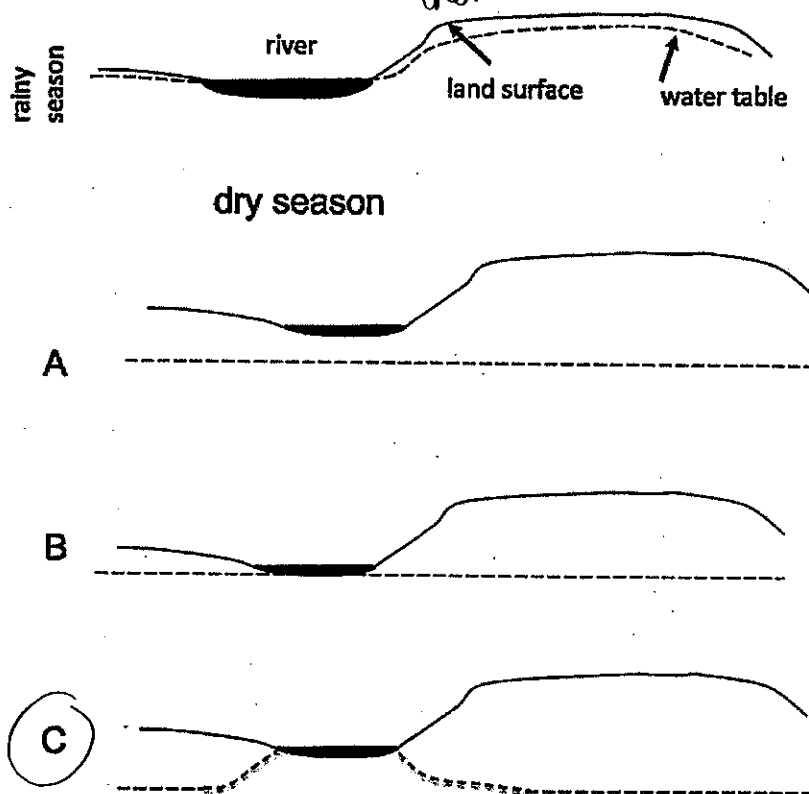
7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A = chemical, B = thermal, C = thermal
 ✓ b. A = gravitational, B = gravitational, C = thermal
 c. A = gravitational, B = thermal, C = thermal
 d. A = thermal, B = thermal, C = thermal

atmosphere. clouds.
 Gas. → Liquid.

Water → ice → gas
 thermal.

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0 g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:

- a. been greater
 b. been less
 c. remained the same

$$\frac{0.9}{1.0} = 0.9$$

10. What happens when plants respire?

- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

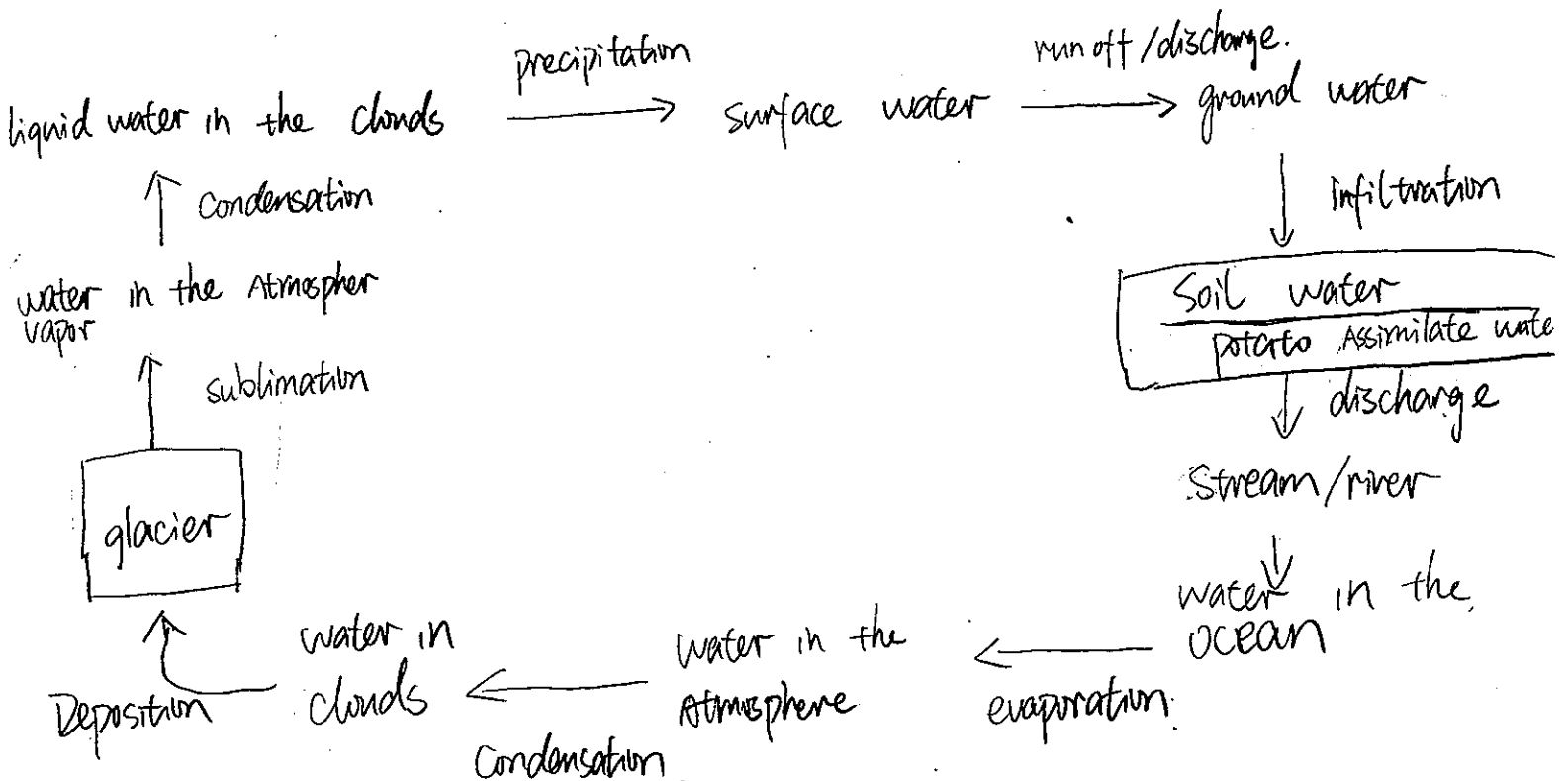
$$\frac{1.1}{1.1} = 1$$

A43219269

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



25

A43219269

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Water circulation happens due to the temperature and density. When temperature increases, water molecules move faster, density decreases. Then wind drives the surface current to move, cold water rise up and warm water sink down. If polar ice contained more salt than the surrounding seawater from which it freezes, which mean the density of seawater will increase and the temperature will decrease. In this way, polar ice are becoming denser and it's easy to freeze. This might slow down the circulation of water movement. During the water freeze process, liquid water need more energy and heat to condense, into solid ice, it converts thermal energy into potential energy. When ice melts, it release energy, the thermal energy decreases,

~~10~~ 10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 37
YOUR SCORE:
72

STUDENT ID #: A433716720; GROUP #: 14

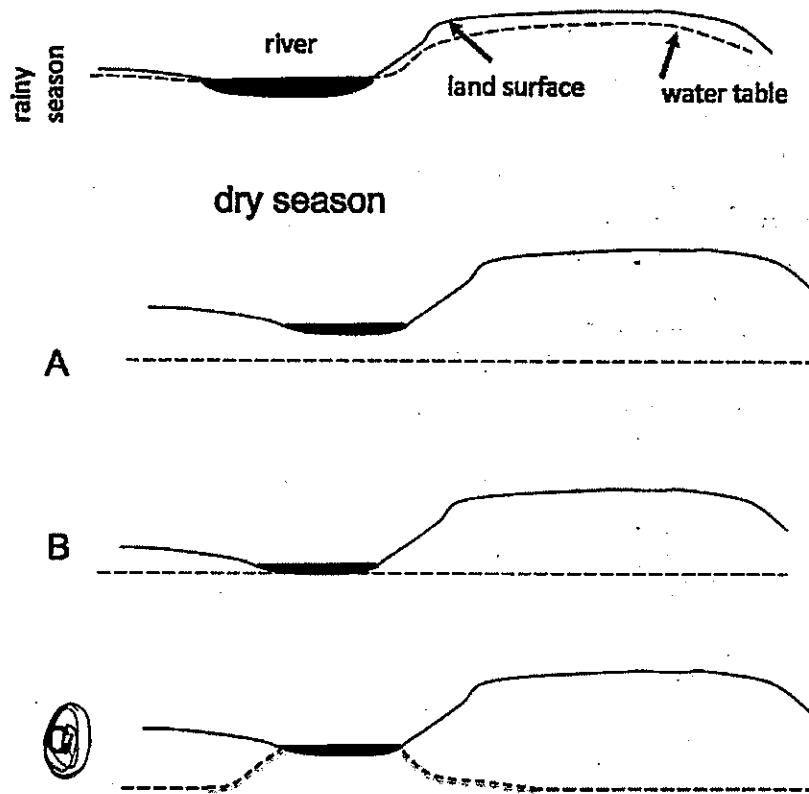
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
☒ b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
☒ c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake
b. Seasonal high water from the Mississippi River
☒ c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
a. A= evaporation, B= deposition, C= sublimation
☒ b. A = condensation, B= precipitation, C= evaporation
c. A= sublimation, B= precipitation, C= evaporation
d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
☒ c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
☒ c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
b. A = gravitational, B= gravitational, C= thermal
☒ c. A = gravitational, B= thermal, C= thermal
d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
☒ b. been less
c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
b. Plants convert energy into biomass
☒ c. Plants release energy

A43376720

ISP 203A: GLOBAL CHANGE

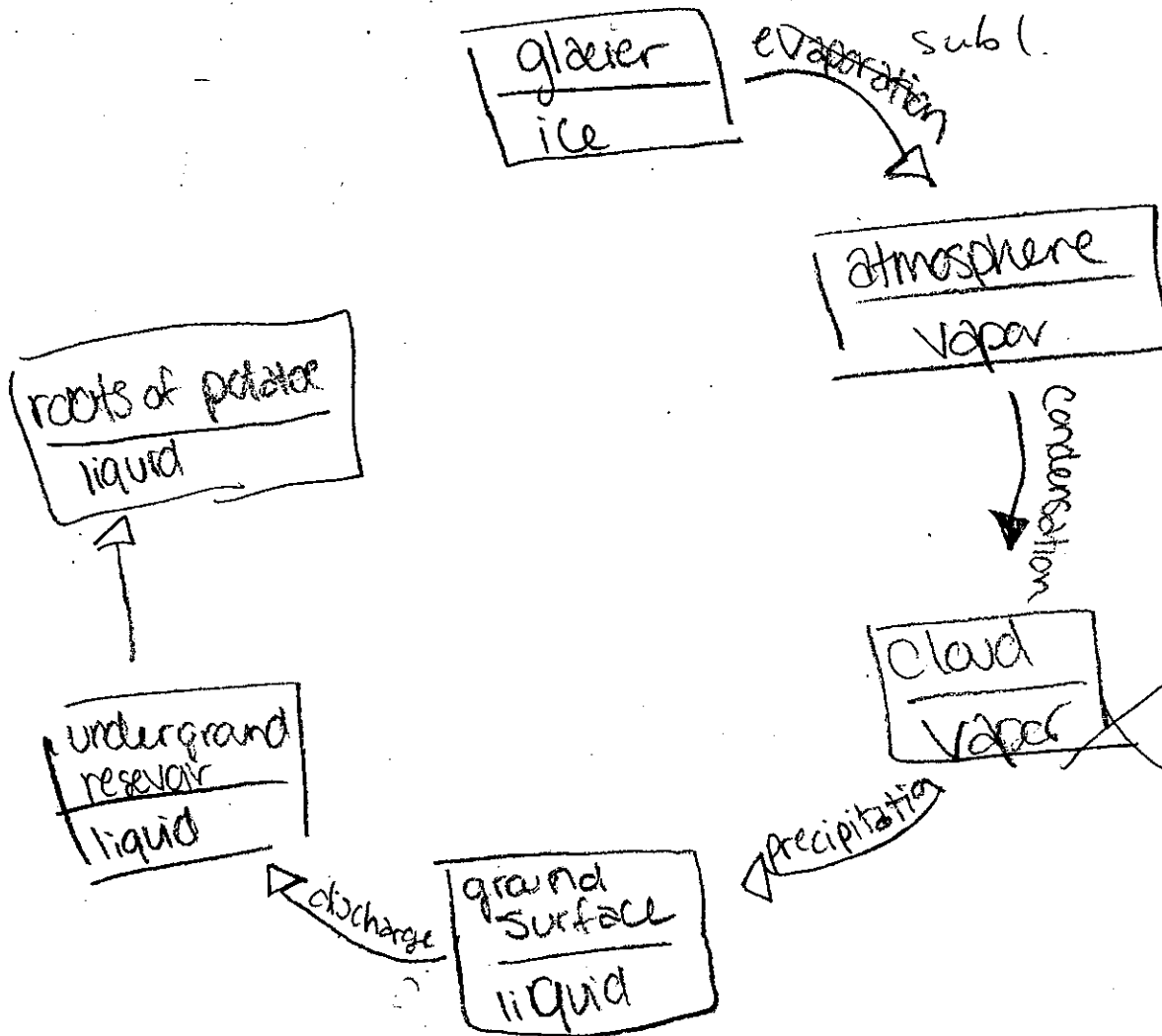
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

3

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A43376720

ISP 203A: GLOBAL CHANGE

EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- a. Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - b. The energy that is causing movement or transformation of water.

Circulation happens because warm water is less dense than cold water & warm water stays near the surface but sinks when it cools down also water is colder at polar regions which causes it move down toward equatorial regions which warms water and causes it to move toward the polar regions again. If polar ice contained more salt than the surrounding seawater the ice would melt faster because thermal energy from the salt would keep melting it & there would be more warmer water than colder water. + ?

10

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- a. They both destroy matter during energy conversion
- b. They both convert thermal energy into gravitational energy
- ☒ c. They both convert chemical energy into thermal energy
- d. They both convert kinetic energy into potential energy.

45 30

YOUR SCORE:

75

STUDENT ID #: A39222014; GROUP #: 14

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?

8

- a. Water molecules become larger
- ☒ b. Gaseous water becomes liquid water
- c. Hydrogen and oxygen atoms combine to form liquid water
- d. The temperature of water molecules decreases

2. Which of the following is the largest freshwater reservoir

- ☒ a. The atmosphere
- ~~b. Oceans~~
- ☒ c. Glaciers
- ~~d. Lakes and streams~~

3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?

- a. Rainfall and surface runoff into the lake
- b. Seasonal high water from the Mississippi River
- ☒ c. Ground water from beneath the surface

4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.

- ~~a. A= evaporation, B= deposition, C= sublimation~~
- ☒ b. A = condensation, B= precipitation, C= evaporation
- ~~c. A= sublimation, B= precipitation, C= evaporation~~
- ~~d. A = precipitation, B= freezing, C= condensation~~

5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?

- ☒ a. Liquid water from the pot condenses
- b. Liquid water from the pot evaporates
- ~~c. Water vapor from the pot condenses~~
- ~~d. Water vapor from the pot evaporates~~

6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?

- ☒ a. This is what one would predict with global warming
- b. This is the opposite of what one would predict with global warming
- c. Predictions about global warming do not address global precipitation.

A39222014

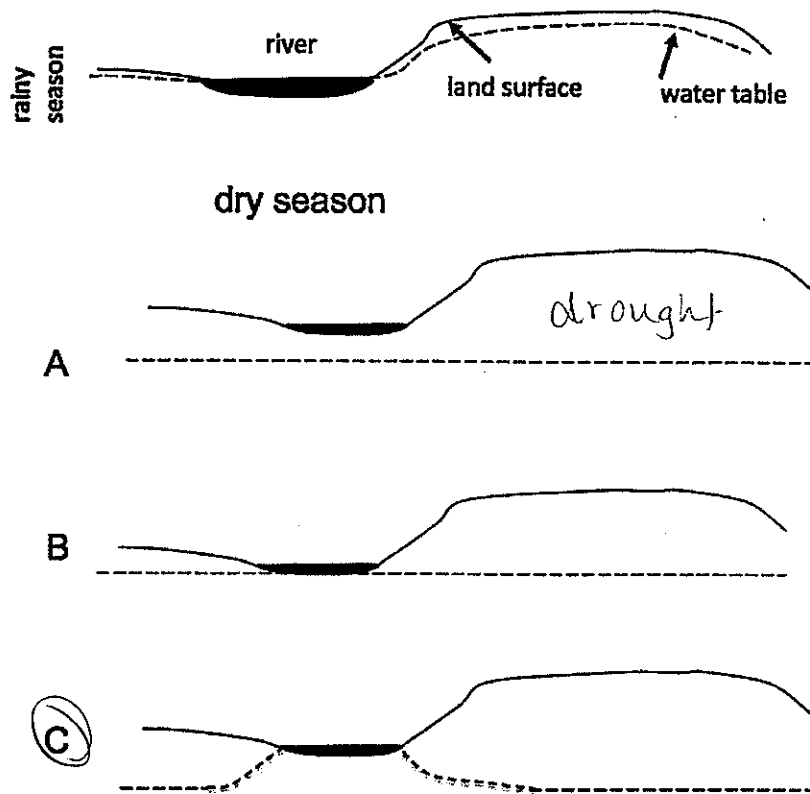
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

2

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ~~a.~~ A = chemical, B = thermal, C = thermal
b. A = gravitational, B = gravitational, C = thermal
☒ c. A = gravitational, B = thermal, C = thermal
~~d.~~ A = thermal, B = thermal, C = thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



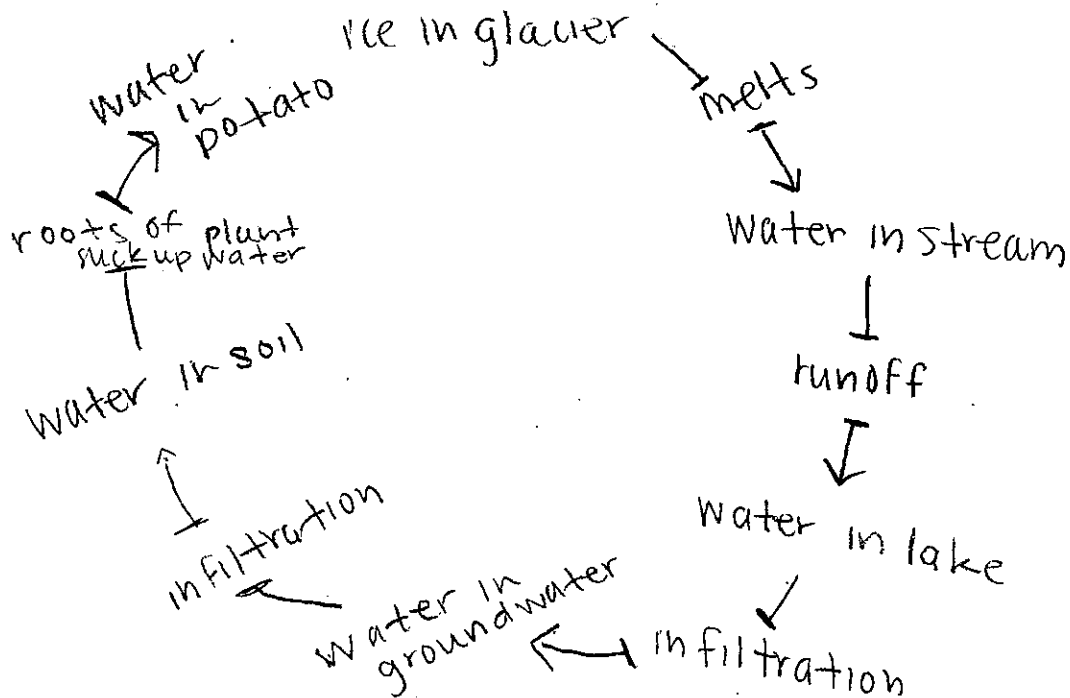
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
b. been less
c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
b. Plants convert energy into biomass
c. Plants release energy

A39222014

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



A39222014

ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.

Since polar water contains less salt than seawater it is less dense. If polar ice contained more salt than seawater it would be more dense, therefore would sink when it melts. The thermohaline circulation would be changed because the colder, saltier water would more rapidly sink to the bottom. Currently, why? thermohaline circulation works to move warmer surface water to cooler climates. [If there is more cooler, saltier water sinking to the bottom of the ocean, warmer water would be pushed to the surface, consequently raising water temperatures.]?

15

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 37

YOUR SCORE:

77

STUDENT ID #: A43424499; GROUP #: 14

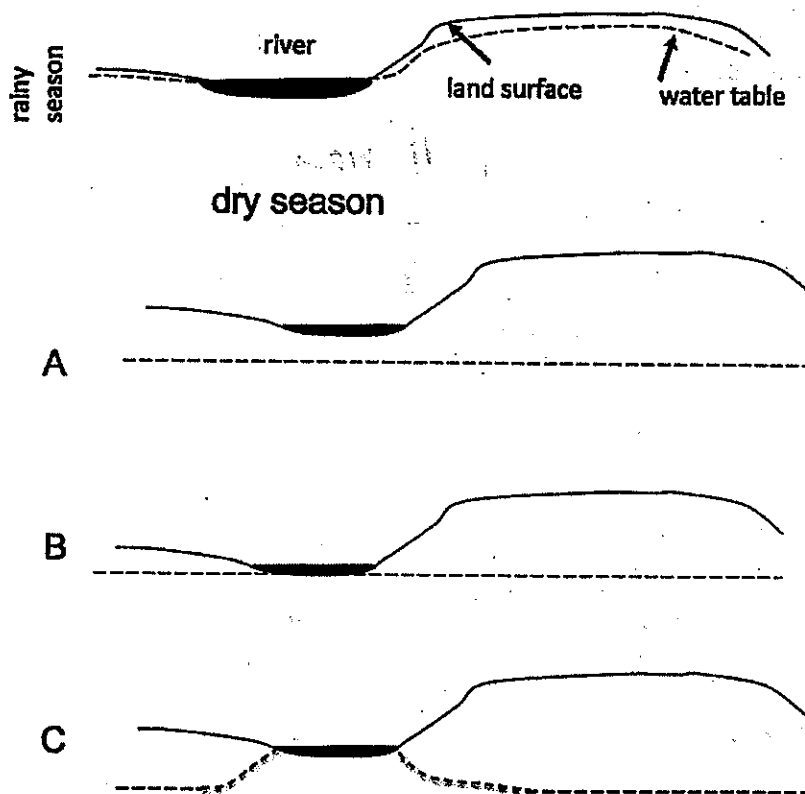
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
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 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface/ 0
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of A, then becomes water in a glacier through the process of B, and then becomes water in clouds through the process of C.
 - a. A= evaporation, B= deposition, C= sublimation
 - b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
 - a. Liquid water from the pot condenses
 - b. Liquid water from the pot evaporates
 - c. Water vapor from the pot condenses
 - d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - a. This is what one would predict with global warming
 - b. This is the opposite of what one would predict with global warming
 - c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- a. A= chemical, B= thermal, C= thermal
 b. A = gravitational, B= gravitational, C= thermal
 c. A = gravitational, B= thermal, C= thermal
 d. A= thermal, B= thermal, C= thermal

8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



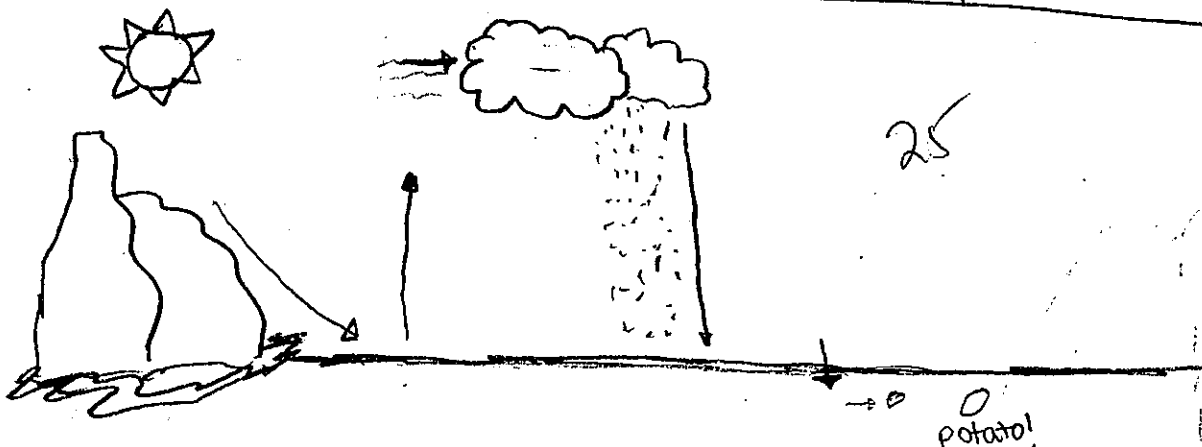
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 b. been less
 c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 b. Plants convert energy into biomass
 c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water

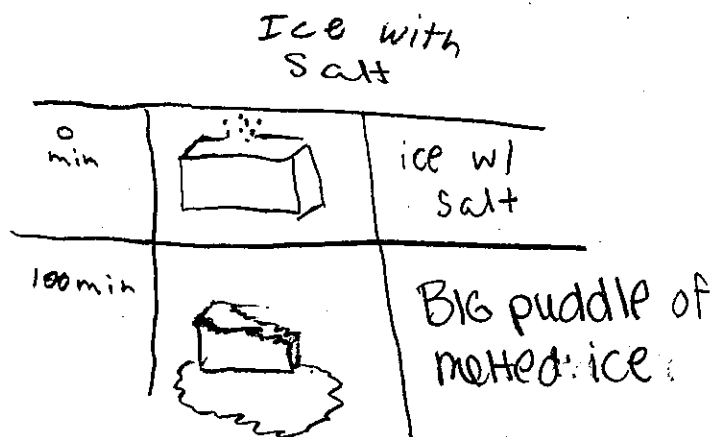
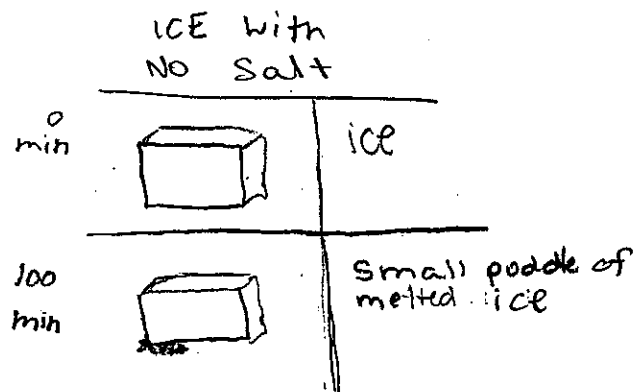
| | | |
|---|------------------------------------|------------------------------|
| 1. water melts from a glacier and is on top of the ground | A. liquid [run off] | B. gravitational energy |
| 2. water is evaporated and goes into atmosphere | A. water vapor [evaporation] | B. thermal energy |
| 3. later, water ^{condenses (cloud)} precipitates and returns to ground | A. liquid water [precipitation] | B. gravitational energy |
| 4. Water soaks into soil | A. liquid water [run off] | B. gravitational energy |
| 5. Potato seed soaks up water | A. Liquid water | B. chemical potential energy |



2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
 - The energy that is causing movement or transformation of water.

less salt more salt

- If polar ice contained more salt than the surrounding sea water, the thermohaline circulation would speed up. 2
- It would speed up because salt melts ice, therefore, the salty polar ice would melt faster than non-salty polar ice
- Thus, causing more run off and available salt water to be evaporated.



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

40 29

YOUR SCORE:

69

STUDENT ID #: A41021960; GROUP #: 15

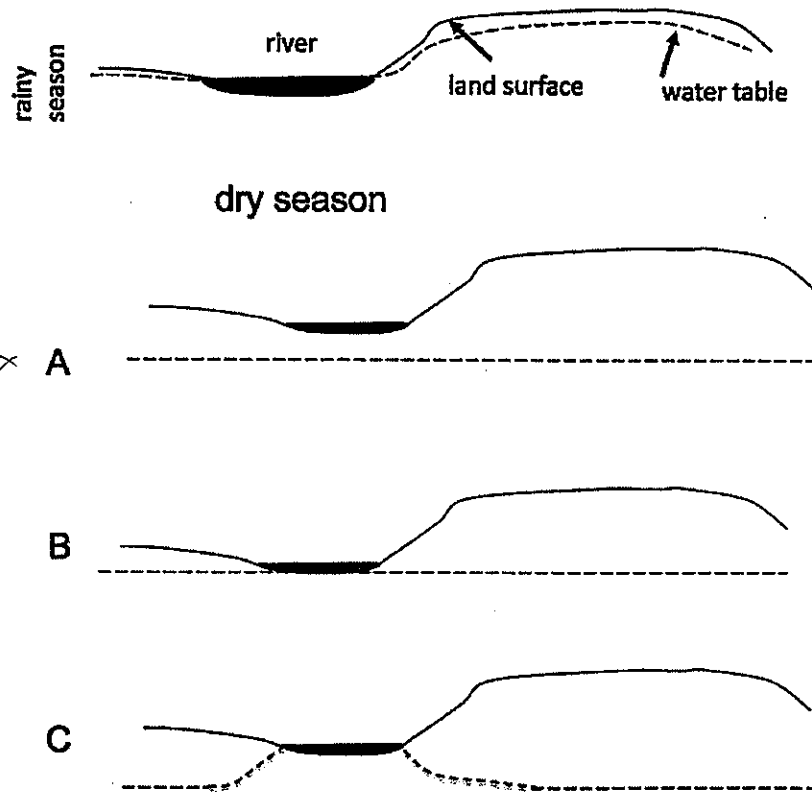
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense?
a. Water molecules become larger
b. Gaseous water becomes liquid water
c. Hydrogen and oxygen atoms combine to form liquid water
d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
a. The atmosphere
b. Oceans
c. Glaciers
d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
a. Rainfall and surface runoff into the lake[<]
b. Seasonal high water from the Mississippi River^x
c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
^x a. A= evaporation, B= deposition, C= sublimation
b. A = condensation, B= precipitation, C= evaporation
^x c. A= sublimation, B= precipitation, C= evaporation
^x d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
a. Liquid water from the pot condenses
b. Liquid water from the pot evaporates
c. Water vapor from the pot condenses
d. Water vapor from the pot evaporates
6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
a. This is what one would predict with global warming
b. This is the opposite of what one would predict with global warming
c. Predictions about global warming do not address global precipitation.

7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

- ☒ a. A= chemical, B= thermal, C= thermal
- ☒ b. A = gravitational, B= gravitational, C= thermal
- ☐ c. A = gravitational, B= thermal, C= thermal
- ☒ d. A= thermal, B= thermal, C= thermal

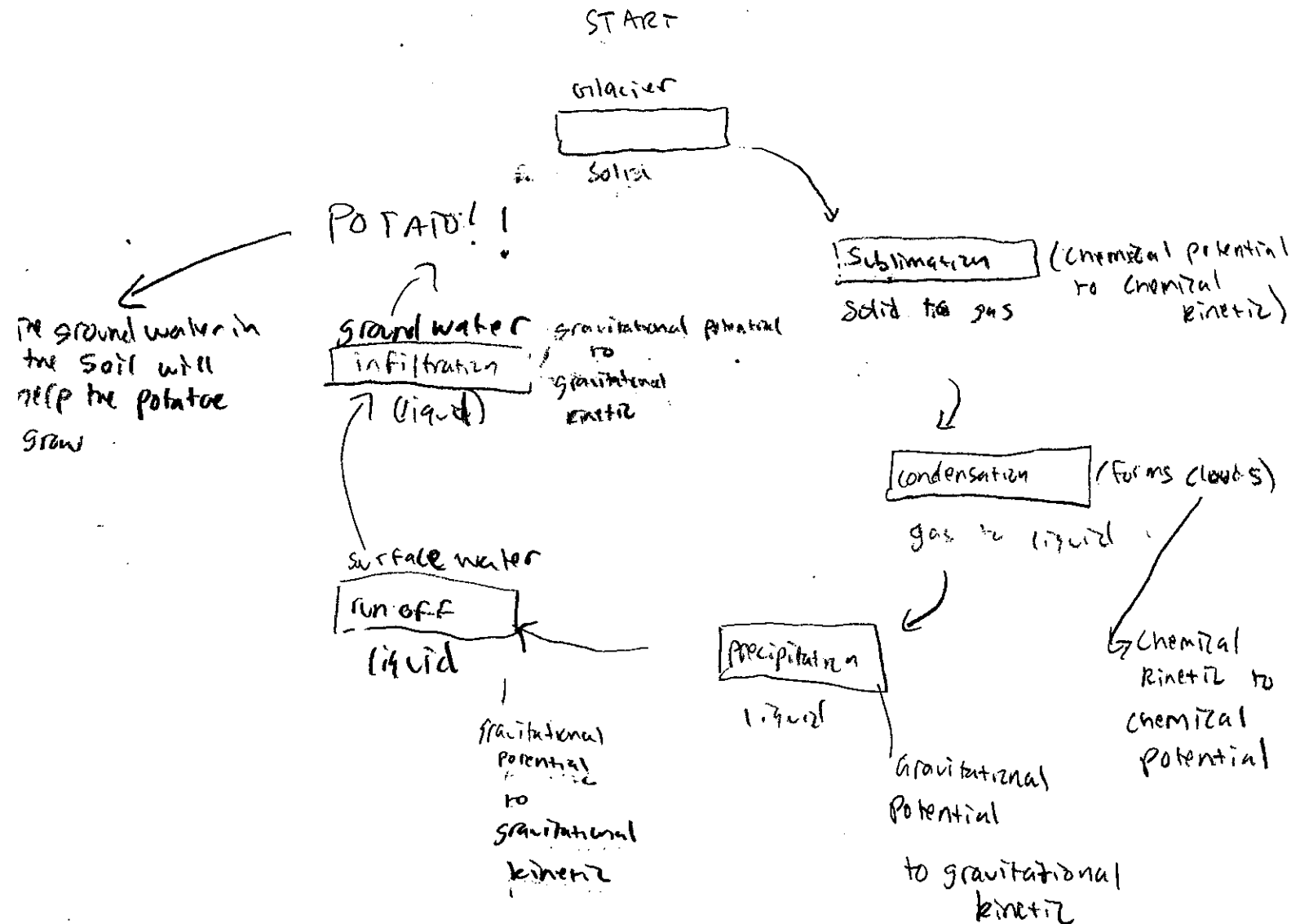
8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- a. been greater
 - b. been less
 - c. remained the same
10. What happens when plants respire?
- a. Plants convert biomass into energy
 - b. Plants convert energy into biomass
 - c. Plants release energy

SHORT ANSWER. 25 points each (50 points total)

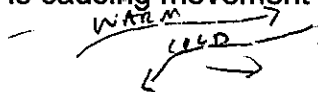
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:
- Water phase at each step in the journey
 - A name for each process that moves or transforms water



2. When ice forms from seawater, the ice contains less salt than the remaining water.

Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:

- Clear reasoning for why circulation happens. Do not simply say that a process is happening – explain why that process happens.
- The energy that is causing movement or transformation of water.



Circulation of water is a result of buoyancy and density. When temperature increases, this causes molecules to move faster, which makes things less dense. Water that is warmer is less dense than water that is cold. Therefore, through buoyancy and density, when warm water comes into contact with cold water, the cold water sinks while the warm water rises. Another factor of density in water is the amount of salinity. Salt water is more dense than fresh water due to the amount of salt in it, and therefore sinks below fresh water when the two come into contact.

If polar ice contained more salt than the surrounding seawater from which it freezes, the polar ice would sink below the surrounding water. During thermohaline circulation, warm water from the equator is rising to the poles where it eventually cools and sinks back down to the equator. With this increase in salt in the polar ice, thermohaline circulation would still occur, because warm waters would still be rising to the poles, where it would cool and sink down.

Polar ice, being more dense, would sink down to the equator where it would eventually melt.

- 2 EXTRA CREDIT (2 points)
EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

35 49

YOUR SCORE:

84

STUDENT ID #: A40641748; GROUP #: 15

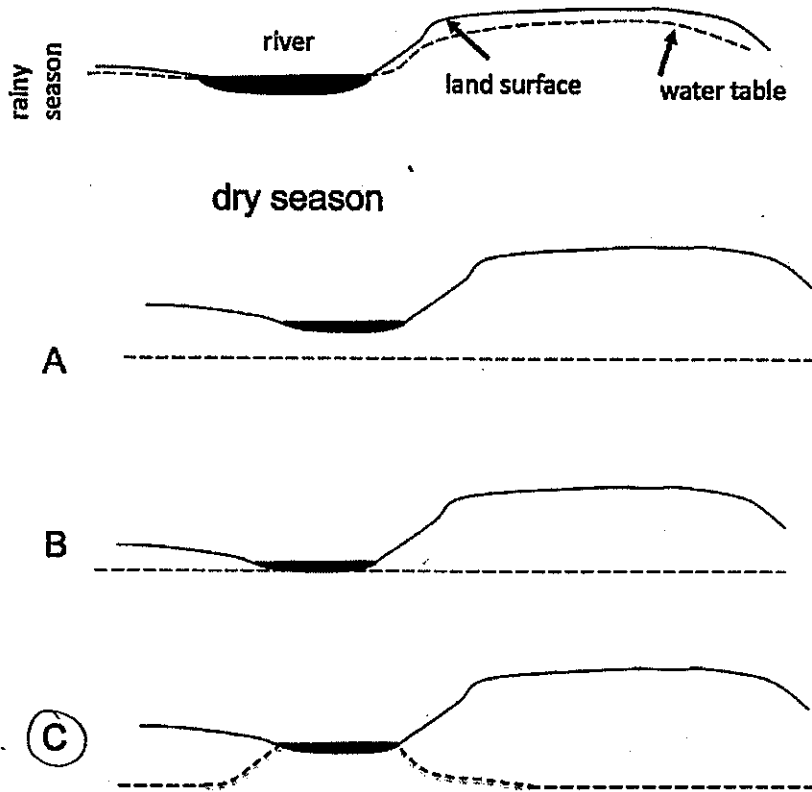
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

1. What happens when water molecules condense? 8
 - a. Water molecules become larger
 - ☒ b. Gaseous water becomes liquid water
 - c. Hydrogen and oxygen atoms combine to form liquid water
 - d. The temperature of water molecules decreases
2. Which of the following is the largest freshwater reservoir
 - a. The atmosphere
 - b. Oceans
 - ☒ c. Glaciers
 - d. Lakes and streams
3. There is a lake on my farm along the Mississippi River. There are no streams running into the lake. Where does most of the water in the lake come from?
 - ☒ a. Rainfall and surface runoff into the lake
 - b. Seasonal high water from the Mississippi River
 - c. Ground water from beneath the surface
4. Fill in the blanks. Water in the atmosphere becomes water in a cloud through the process of ____A____, then becomes water in a glacier through the process of ____B____, and then becomes water in clouds through the process of ____C____.
 - a. A= evaporation, B= deposition, C= sublimation
 - ☒ b. A = condensation, B= precipitation, C= evaporation
 - c. A= sublimation, B= precipitation, C= evaporation
 - d. A = precipitation, B= freezing, C= condensation
5. When a teapot boils we see a white cloud rising from the spout. Why does the white cloud form?
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6. 2010 was the warmest year on record. It was also the wettest, meaning there was record precipitation. Which of the following statements is most accurate?
 - ☒ a. This is what one would predict with global warming
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7. Fill in the blanks. Water on the ground becomes water in the soil as a result of _____ A _____ energy. Water in the atmosphere becomes water in clouds as a result of _____ B _____ energy. Water in clouds becomes water in the atmosphere as the result of _____ C _____ energy.

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8. The drawing to the right represents a slice through the earth with the dashed line representing the water table. If the top diagram represents an area during the rainy season, which figure would best represent that same region during a dry season?



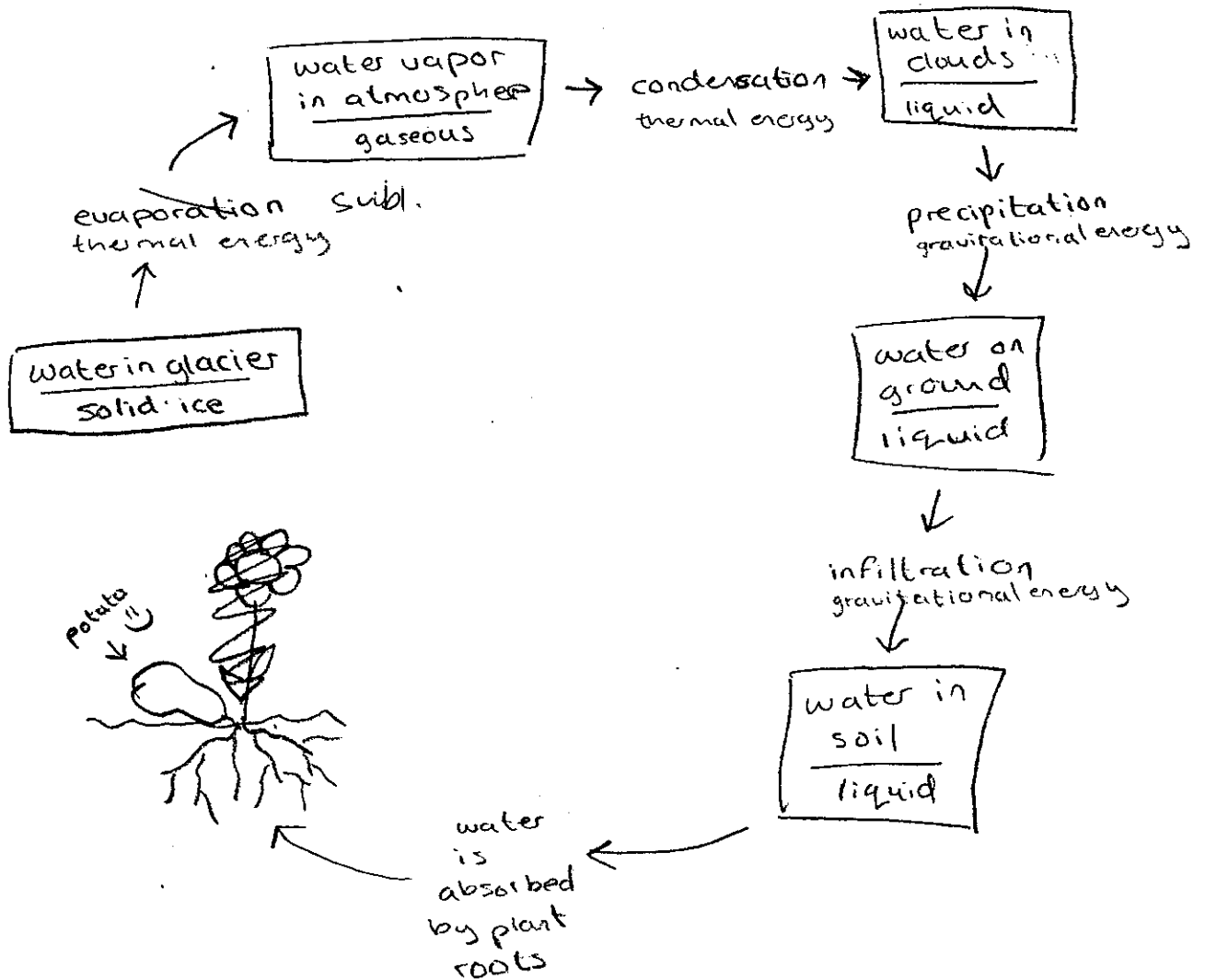
9. We can calculate the rise in sea level due to melting glaciers. In that calculation, we need to know that the density of ice is 0.9 g/cc and the density of liquid water is 1.0g/cc. If the density of ice were greater than the density of water, then the calculated rise in sea level would have:
- ☒ a. been greater
☐ b. been less
☐ c. remained the same
10. What happens when plants respire?
- ☒ a. Plants convert biomass into energy
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A406 41748

SHORT ANSWER. 25 points each (50 points total)

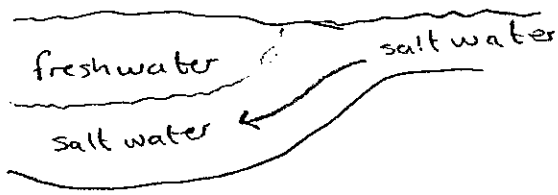
1. Provide an explanation for how a water molecule could naturally move from a glacier to become part of a potato. You are encouraged to use lists, pictures, and/or tables in your explanation. Your explanation must include:

- Water phase at each step in the journey
- A name for each process that moves or transforms water



22

2. When ice forms from seawater, the ice contains less salt than the remaining water. Describe how thermohaline circulation in oceans would change, if at all, if polar ice contained more salt than the surrounding seawater from which it freezes. You are encouraged to use lists, pictures, tables or other visuals in your explanation. Your explanation must include:
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buoyancy: Fresh more buoyant
density: fresh less dense

10. Circulation is affected by the density of water and the temperature. Higher temperature is less dense and water with higher salinity is more dense because it contains more sodium ions. This is why when fresh water flows into seawater it floats on top because it is less dense. This is caused by gravitational energy because the state of the water hasn't changed, only its composition. If the polar ice contained more salt, the energy that causes movement & transformation wouldn't change. Dense water would still sink because of gravitational energy. Evaporation & condensation would still be caused by thermal energy. I don't think thermohaline circulation in oceans would change because more salt would not cause processes to slow down or speed up and the energy that causes these things to happen would stay the same.

2 EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

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40 34
YOUR SCORE:
74

STUDENT ID #: A4094500 5; GROUP #: 15

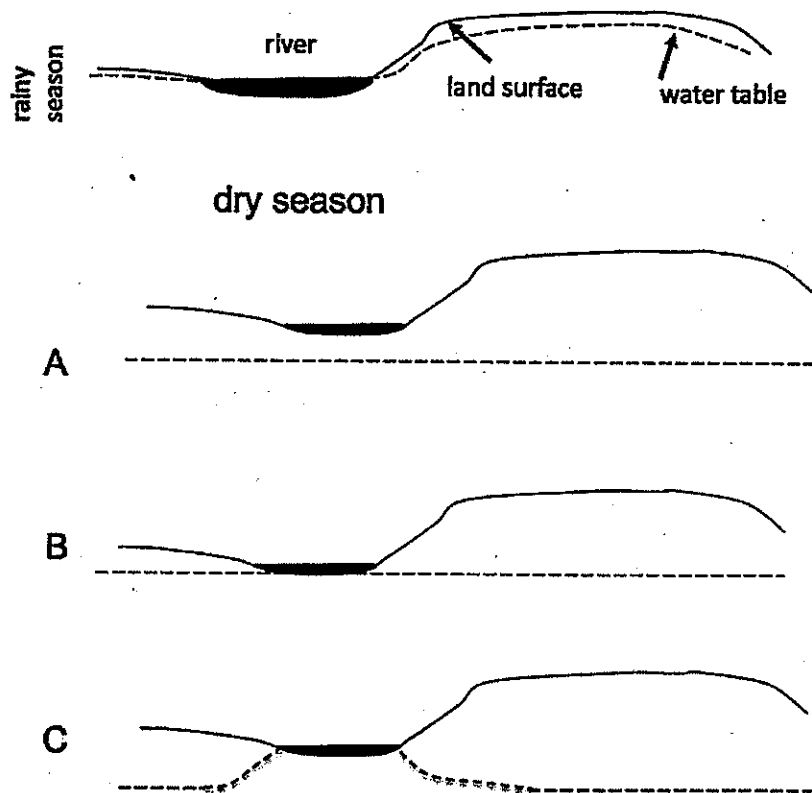
MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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When water is a part of a glacier it is solid. When temperature rises and the sun is shining parts of the glacier starts to melt and turn into liquid water. The water then travels in the ocean and some of it evaporates into the atmosphere. ^{as?} Thermal energy condenses it back into liquid in a cloud. Then gravitational energy brings the water down as precipitation. Some of the water soaks into the earth. The growing plants soak up the water in order to live and grow. A potato uses a lot of water.

A 40945005

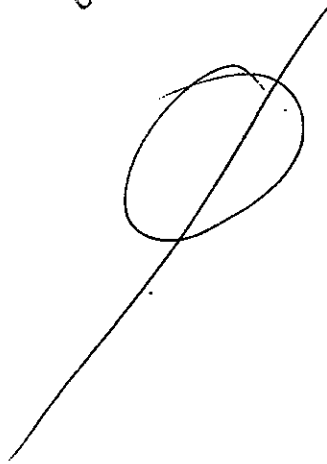
ISP 203A: GLOBAL CHANGE
EXAM #1; Sibley/Libarkin, Spring 2011; 100 points

4

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- The energy that is causing movement or transformation of water.

Circulation happens because the water is constantly moving. Water that contains a lot of salt does not freeze usually. The thermohaline circulation changes if polar ice contains more salt. The change is chemical.



2

EXTRA CREDIT (2 points)

EC. How are burning wood and respiration similar?

- They both destroy matter during energy conversion
- They both convert thermal energy into gravitational energy
- ☒ They both convert chemical energy into thermal energy
- They both convert kinetic energy into potential energy.

30 24

YOUR SCORE:

54

STUDENT ID #: ~~XXXXXX~~ A42669701; GROUP #: 15

MULTIPLE CHOICE. 5 points each (50 points total). Please choose the BEST answer.

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8

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